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The Massachusetts Medical Society

The next Annual Meeting of the Massachusetts Medical Society will be held in Boston, June 11 and 12, 1929, "unless otherwise odered by the Council."

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The Massachusetts Medical Society

SECTION OF SURGERY

Tuesday Morning, June 5, 1928

THE Section of Surgery of the Massachusetts Medical Society, held in the Main Hall of the Chamber of Commerce Building, Worcester, Massachusetts, convened at nine-twenty o'clock, Dr. Frederick B. Sweet, the Chairman, presiding.

CHAIRMAN SWEET: *Fellows and Guests*: We are privileged this morning to inaugurate the 1928 session of the Surgical Section of the Massachusetts Medical Society, and incidentally the One Hundred and Forty-seventh Anniversary of the organization.

You will notice from your program that we are to have this morning a symposium on the surgical diseases of the gall-bladder, the bile-ducts and the pancreas. I think in order to expedite matters that the discussion of the various papers will be postponed until all have been read.

The men who are to discuss the various phases of the subject this morning are not only known to all of us but they are each and all men of international reputation, men who would be recognized in any body of surgeons anywhere the world over, and my task therefore as presiding officer is a very simple one as well as a very pleasant one.

The first paper of the session will be upon the "Surgery of the Gall Bladder," by Dr. John Erdmann of New York, Professor of Surgery at the Post Graduate School and Hospital. Dr. Erdmann. (Applause.)

SURGERY OF THE GALL-BLADDER*

BY JOHN F. ERDMANN, M.D., F.A.C.S.†

SURGERY of the gall-bladder to-day constitutes one of the most frequent appeals to the general abdominal surgeon, and should be considered under two general types of operation. Gall-bladder surgery consists of the time-honored subject—unsettled by many operators—as to choice of cholecystostomy and cholecystectomy. Without an apology I shall dismiss the subject of cholecystostomy with a merited but brief set of arguments.

I do not do a cholecystostomy except in the event of a definite obstruction or suspected carcinoma obstructing the flow of bile into the intestine. For cholecystostomy to be efficacious in such a condition, the obstruction must be below the junction of the cystic and hepatic as these two enter into the formation of the common duct. Obstruction above this point will not be benefited by a cholecystostomy.

I do not do cholecystostomy in acute cholecystitis except in the rarest of instances, those extremely ill patients who would, by their physical condition, permit of nothing but local anesthesia, and I am quite positive that this type of patient occurs in my clinic and practice less than ½ per cent. of all my gall-bladder operations.

Nor do I do a cholecystostomy, fearing to do the radical from the infection aspect, as a preliminary stage. I found years ago that those patients with purulent or gangrenous gall-bladder do far better with the primary cholecystectomy, than a cholecystostomy to be followed by a second surgical trauma. Also that the removal of the infected area is followed by a very short and sharp convalescence.

Furthermore, an acute gall-bladder has been prepared for early removal by the very process of inflammation. The walls become edematous and a rapid finger dissection is made after the serosa is incised. This type of gall-bladder lends itself to a spectacular delivery due to the facility in stripping the peritoneal and muscular coats from the submucosa and mucosa.

My indications for a cholecystostomy, as mentioned before, are when a definite malignancy or suspected malignancy occurs or when an inoperable obstruction to the outflow of bile is situated below the cystic duct. Besides being due to malignancy, the obstruction may be a stenosis from scar or fibrous tissue; may be an unrecognized and non-dislodgable stone in the pancreatic portion of the duct, or may be due

*Read before the Massachusetts Medical Society, at Worcester, June 5, 1928.

†For record and address of author see "This Week's Issue," page 743.

to a pancreatitis producing sufficient pressure on the duct to obstruct it. Our most frequent causes of duct obstruction distal to the cystic duct are carcinoma of the papilla of Vater and carcinoma of the pancreas.

In any of these types of obstruction, cholecystostomy, either permanent or temporary, is indicated. In preference to doing the classical cholecystostomy in this condition I am advising and doing that operation which makes a permanent by-way between the duodenum or stomach and the gall-bladder, i.e., cholecystoduodenostomy or cholecystogastrostomy, and giving preference to the latter.

This preference is not based on physiological reasons, but upon the surgical facility plus the experience gained in having done this operation many times, finding that there is no gastric irritation following, nor any apparent deviation in the physiology of digestion.

The surgical facility is demonstrable as soon as the abdomen is opened. The pyloric antrum of the stomach is in view, and well within operable reach without the necessary trauma that is demanded when one mobilizes the duodenum for anastomosis. Again the fundus of the dilated gall-bladder lays over or on the stomach, while in doing the operation of cholecystoduodenostomy one must bury the fundus well down in the abdominal cavity.

Bear in mind in this type of obstruction to the outflow of bile we have in over 80 per cent. a well-dilated, non-inflamed gall-bladder, Courvoisier's law being well carried out, while in the obstruction above the terminal portion of the cystic duct, those patients in whom this type of operation is not indicated, we find, as a rule, a small, atrophied or contracted gall-bladder. This latter type of gall-bladder also obtains in the fluctuating obstructions due to stone in the common duct. Therefore, upon opening the abdomen (if no enlargement has been palpated before operation, the gall-bladder is found large and non-inflamed) search for the obstruction distal to the junction of the cystic and hepatic ducts. If the gall-bladder is found small (empty or partially so, contracted or atrophied) search above the cystic duct in the event of no stone being present in the common duct. In the event of an acute pancreatitis being present with edema of the entire neighbourhood, then a cholecystostomy not only may but should be performed.

To summarize: Cholecystostomy is done only when (a) there is a definite use of the gall-bladder as a means of making a by-way, or (b) as a means of drainage as in case of pancreatitis associated with edema that masks or makes impossible the diagnosis of the immediate obstruction. The objection on my part, and that of the greater number of operators, to doing cholecystostomy in the non-malignant obstruction and inflamed gall-bladder is that the tour of illness is longer than in an "ectomy", the morbidity is prone to be more positive and more prolonged than in "ectomy". The recurrence of infection, etc., is positive in a fair percentage of all patients so operated.

Cholecystostomy is done with the Khader method of suturing a tube in any hollow viscus. Preliminary to suturing the tube into the opening made into the gall-bladder I measure the length of the cavity by introducing the tube to the bottom of the gall-bladder, then withdrawing it 1/3 to ½ of the length introduced. Sew the edge of the cut gall-bladder with one stitch through the tube, finish closing the opening and then place in a purse string—suture ¼ to ½ inch below the opening, plunge the sewed-in tube down, which will carry the fundus inward. As the fundus disappears draw the purse string suture and tie it. Never sew the gall-bladder to the parietal peritoneum, as it assists in producing some of the dragging that our patients with cholecystostomy complained of years ago.

POST-OPERATIVE COMPLICATIONS.—Persistent sinus is a relatively frequent occurrence and demands a second operation, the dread of which has caused patients to suffer untold from months to years. During the first half of 1927 I operated on several of these sinuses and invariably found one or more stones the cause. In this series one carried her sinus sixteen years, one large stone delivered with the "ectomy". She had been operated at the age of seventeen. The second patient, one large stone delivered with the "ectomy", carried his sinus six years. The third, several small and one large stone, sinus duration nine years. One male, twelve years, secondary operation, contracted gall-bladder filled with millet-seed sized calculi.

The sinus in this class of patient is not discharging continually, but intermittently, the gall-bladder fills with mucus (usually) or mucus and bile, thereby producing distress, etc., the closed mouth of the sinus opens, the contents discharge with relief to the patient, and so on until surgery gives permanent relief.

CHOLECYSTECTOMY.—Many of the foregoing arguments against the operation of cholecystostomy are the strong arguments for cholecystectomy, such as the elimination of the formation of sinuses resulting from incomplete operation, i.e., leaving a stone. The use of non-absorbable suture material in implanting the drain, an operative sinus of commission instead of an incomplete operation. The leaving of an infected body, the gall-bladder, producing or prolonging morbidity. The leaving of a useless shell that is subject to further or a new infection process. The leaving of a useless shell that may again produce stones, any and all of these subjecting the patient not only to many disagreeable symptoms, but likely to demand a second operation which, owing to post-operative adhesions, etc., makes greater hazard in the second

operation than a complete in the first would have been.

I am calling your attention to the fact that a few years ago, reporting about 300 operations in a short period of time, the mortality of ectomy was almost ½ per cent. less than that of ostomy. Fearing that I had erred, but not finding it so in going over my figures, I was pleased to note shortly that a large western and midwestern clinic in their reports gave about the same mortality results. This, very naturally, was quite an incentive to continue the ectomies irrespective of other stable and strong arguments.

The period of convalescence in cholecystectomy is far less than that in cholecystostomy. This is an added argument when operating on the business man or woman, or the laborer.

Nevertheless, all being said for or against these operations, I cannot refrain from making the statement that the occasional operator will or should have his best results as to mortality, by doing a cholecystostomy, and will therefore add that each operator should in the interest of his patient do that type of operation he is most conversant with, and the one that will bring relief to his patient with the least mortality. Bear in mind that each cholecystectomy done is an operation that contains a potential risk of injury to the common or hepatic duct. Even may I quote (and not theoretically) that the hepatic artery, portal vein, and vena cava, have been injured in this operation that the cystic artery has been injured or slipped out of the forceps grasp producing a great deal of troublesome hemorrhage before caught and controlled.

Either of the two operations under discussion has been accompanied with injuries to the duodenum, stomach, and transverse colon. Fortunately, if recognized, these injuries are far easier to control than those of injury to the ducts or bloodvessels. Recognized injury to the common duct should be repaired immediately by one of the many efficient methods. It is the late evidence of injury to the ducts, or secondary contraction, that are difficult of repair and give a high operative mortality.

Spillage of bile into the operating field is of no serious aspect, nor is the spillage of pus or infected gall-bladder contents. It is, of course, conceded that the field of operation has been well protected by gauze sponges, and carefully wiped or sponged before the final closure.

Massive spillage of bile into the peritoneal cavity has been seen by me on several occasions, four of which I can lay personal claim to, during the first few post-operative days, three recovering with proper drain introduced, the fourth dying from a post-operative pneumonia, complicating the condition of a third day discovery of intraperitoneal bile.

A remarkable case of massive spillage of bile came under my observation on the fifteenth post-operative day in the wife of a physician. She was one of three cholecystectomies done in one afternoon by a surgeon in a neighbouring town. The others made a proper recovery.

This patient, about 110 pounds in weight, 5 feet, 3 inches tall, began her second day with some abdominal distress, no temperature, and slight acceleration of pulse. She had finished her fifteenth post-operative day, and was in her home twenty-four hours, with the history that she had been treated for tympanitis for fully ten days past; her abdomen was distended equal to a full term pregnancy; that she had also had a low median line incision that was made to reach some tubo-ovarian condition; that the operating surgeon had opened the lower incision, the morning of the day I saw her, to what he took to be omentum and finding some bile-stained fluid, put in a catheter drainage-tube. She presented the picture of a full-time pregnancy patient. Pulse 110, respiration 30, fairly cheerful, complaining of difficulty in breathing, and of "gas" in the abdomen. The lower wound contained a catheter but not into the peritoneal cavity; the upper was healed. Percussion revealed dullness like that of ascites. Diagnosis: intraperitoneal bile. Cause: slipping of cystic duct ligature or non-recognized injury to common duct.

I pushed my finger into the peritoneal cavity, and removed over 10 pints of clear bile by introducing the tube into the peritoneal cavity. In two days the patient was admitted to the Post-Graduate Hospital, and was observed for five or six days. The abdomen, during this time having discharged through the tube a fair amount of bile for three days, then began to distend in its upper portion.

Operation through the original gall-bladder incision evacuated 80 ounces (5 pints) of bile that was measured, besides the spill of over 8 to 10 ounces on the side. The subsequent convalescence was rapid, bile ceased to flow in a couple of weeks. The patient gained in weight, and then began to jaundice. Diagnosis: injury to the common duct. Repaired in six to eight weeks, patient perfectly healthy, quite a gain in weight.

I have gone rather into detail in this patient's experience to show the innocuousness of bile in the peritoneal cavity. I also refer you to an early contribution of mine, some twenty to twenty-five years ago, on typhoid rupture of the gall-bladder, large amount of bile in the peritoneal cavity, recovery, etc.

These remarks about intraperitoneal bile call for the question of drain or not. For many years, long before Richter's article on non-drainage, I was accustomed to sew up tight in those patients whom I felt had no marked evidence of infection. It was in these patients that the four leakage cases occurred. Each time I had a leak I resorted to drainage until my non-drainage courage returned. I have now for some years been sewing up tight all cases of even mild infections, and draining only those I find with a marked amount of edematous tissue in the gall-bladder suleus, or patients with a very profound amount of pus in the field of operation, with or without gangrene.

The non-drainage argument does not apply to invasions of the common duct, nor those patients with pancreatitis. I am not inclined to the radical procedure or advice of Eisendrath of Chicago, to open the common duct in all gall-bladder patients, but am rather guided by

the condition of the common duct at the time of operation and the history preceding the operation. If there has been a positive jaundice history, if the common duct is distended, of course if stone or stones are palpable, then I add a choledochostomy to the cholecystectomy.

Before operating on a patient with jaundice of over three to four days' duration I invariably demand a complete blood-picture and a coagulation time by the capillary method. Should the coagulation time be over seven minutes, I do not risk the patient to a slow, oozing death, but use all known methods for reducing coagulation time, the simplest being Walter's method of chloride of lime. If this does not reduce the coagulation time after the third dose, I then have the patient transfused to the full limit, and operate.

I am accustomed to make an ample perpendicular incision through the inner and mid third of the rectus muscle with the Bevan extension when necessary. The liver is rotated when possible. The use of a Balfour modification of the Garland retractor, and in fat people the third blade is of the Horgan type. This retractor will eliminate the hands of two assistants and useless side instruments.

No sand bag nor elevation have been used by me for many years; not experiencing any difficulty in the exposures without them, and not benefiting any by them, these so-called aids were dropped. Neither have I found it necessary to pack the space above the liver in doing the most difficult ones.

There are no fast rules as to the method of removing the gall-bladder from above downwards—below upwards or a combination of approaches, but I am accustomed to approach the gall-bladder from the side, first incising with knife or scissors the peritoneum about ½ to ¾ of an inch from the liver as far up as the fundus and down to the cystic duct. The gall-bladder is rotated on its long axis as the cellular tissue, vessels, etc., are incised. This allows of free vision of the cystic and common ducts. The cystic is clamped fairly close to the gall-bladder and may or may not include the vessels. Another clamp is placed on the cystic duct, etc., and the duct is then cut between; the proximal clamp is allowed to drop into the abdominal cavity. The distal clamp is used as a retractor while the gall-bladder is dissected free from its bed. Suturing the cystic fissures is done only to prevent oozing. I have not found, nor think it necessary to carbolize or cauterize or suture-bury the stump of the cystic duct.

There are times when a preliminary emptying of the gall-bladder will facilitate its removal. One of the best aids in addition to the retractor is the use of a sucker with the ordinary tonsil sucker attachment. By using this aid one keeps the field clear of bile or pus and blood, being able thereby to see the anatomy perfectly and detect bleeding points.

There are times, especially in the acute and oedematous cases, where one cannot definitely outline the cystic duct. In this type it is advisable to split the gall-bladder sufficiently to introduce the index finger into the ampulla, thereby outlining the beginning of the cystic duct.

I cannot close without calling attention to the anomalous vascular and duct possibilities. The vascular anomalies are easily treated, while the duct anomalies require very careful consideration as the ligation of an anomalous cystic duct may be the source of conveyance of bile from the liver through its intra-hepatic ducts, while the extra-hepatic duct is contracted or cicatricial. The bile flowing from the liver into the gall-bladder, and then conveyed by what appears to be the normal cystic duct, one can readily understand in such an instance the gravity of doing a cholecystectomy. One such case occurred in my clinic a few years ago. Repair attempts were fatal because of further anomalies in the hepatic system.

A second case of multiple or anomalous ducts occurred in my service this year. Fortunately these two ducts were small and led into a normal hepatic duct.

MORTALITY—I feel that I can safely say that our deaths are not due to peritonitis, but to pneumonia, renal or cardiac complication in the order given and that the mortality in the male is greater than in the female.

I advise cholecystostomy when necessary to conserve the gall-bladder for a by-way in case of distal duct obstruction of neoplastic origin,

Cholecystectomy, one stage because of the rapid convalescence.

Cholecystectomy, the lesser or equal mortality.

Cholecystectomy, the lesser morbidity.

Cholecystectomy, obviating secondary operation for sinus, retained stone and recurring cholecystitis.

That the occasional operator should do the operation he is most familiar with, and with which he can deliver the lesser mortality.

That in doing a cholecystectomy great care must be taken to prevent injury to the ducts, the vessels, and the surrounding viscera.

CHAIRMAN SWEET: The next paper is on the "Surgery of the Bile Ducts," by our own Dr. Lahey. (Applause.)

SURGERY OF THE BILE DUCTS*

BY FRANK H. LAHEY, M.D., F.A.C.S.†

OUT of 837 operations done in the clinic for biliary tract disease, 158 were on the bile ducts, either in addition to the gall bladder operation, or on the bile ducts alone. It is therefore evident that the incidence of bile duct difficulties (demanding exploration of the ducts in this series) is not by any means low,—19%.

The conditions for which the bile duct operations were done were stones in the common or hepatic duct, or both; infection of the common and hepatic duct,—cholangitis; stricture of the common or hepatic ducts; complete destruction of the common duct, and obstruction of the ducts due to malignancy.

The preoperative diagnosis of the presence of common or hepatic duct stones cannot be accomplished with any degree of certainty, since with symptoms and signs strongly suggesting this condition, exploration of the ducts will not infrequently fail to demonstrate their presence, and in the complete absence of any symptoms suggesting their presence, stones—particularly at the lower end of the common duct—will not infrequently be found.

As the result of our experience with surgery of the bile ducts, we have had the following conclusions impressed upon us. That common duct stones frequently exist in the complete absence of any symptoms; that gall bladder colic may occur with jaundice and symptoms strongly suggesting the presence of common duct stones and yet none be found; that infection in the common and hepatic ducts may occur unassociated with gall stones and may produce symptoms and signs similar to those of common and hepatic duct stones, and that common duct stones may be present without jaundice and clay-colored stools, but also may be present with only very mild symptoms of biliary colic. so that only the suspicion of stones in the gall bladder arises in the mind of the examiner. In general, it may be said that stones are rarely found in the ducts except where gall stones have also existed in the gall bladder for a long time. Rarely do stones exist in the hepatic and common duct except where gross pathological changes in the wall of the gall bladder are present and obvious, such as contraction and thickening of the gall bladder; and rarely do stones exist in the common and hepatic ducts without thickening and dilatation of this main bile canal.

Many exceptions to these usual findings occur, however. We have, for example, within the last year seen four stones the size of shoebuttons in the lower end of the common duct close to the ampulla of Vater in a patient whose common duct was not dilated, was unthickened, and who had not presented symptoms in any way suggesting biliary tract difficulties other than those associated with stones in the gall bladder. We have not infrequently removed stones from the common duct in patients whose gall bladders, while containing stones, were not contracted and not particularly thickened. Likewise we have opened several thickened and dilated common ducts with histories suggesting stones and have failed to be able to demonstrate them, in some instances, perhaps, due to the fact that the stones had been recently passed, but in many more the symptoms and thickened and dilated duct were the result of duct infection unassociated with stone.

The lesson, therefore, which we have learned from our experiences with surgery of the bile ducts as relates to stone is that surgeons must guard against a tendency to be satisfied solely with the removal of the gall bladder and its contained stones in many cases of gall stone colic. We feel sure that no matter how lacking the case may be in the way of symptoms or visual evidences of the presence of stones in the main bile channels, a most painstaking search must be carried out as to their possible existence. This does not mean that in every case in which

TABLE 1

BILIARY TRACT OPERATIONS

Operative Mortality

1910-1926	619 Operations	35 deaths		5.6%
1927-1928	198 "	1 "		0.5%
1910-1928	817 Operations	36 deaths		4.4%
	10 Strictures	1 "		10.0%
	3 External Biliary Fistulae	1 "		33.3%
	4 Carcinoma of Ducts	1 "		25.0%
1910-1928	834 Operations with 39 Operative Deaths			4.7%

TABLE 2

CHOLEDOCHOSTOMY

156 Choledochostomies in 834 Operations		18.7%
77 for Common Duct Stone		9.2%
79 for Exploration and Drainage		9.5%
1910-1926	96 Choledochostomies in 619 Operations	15.5%
1927-1928	60 Choledochostomies in 198 Operations	30.3%
1910-1926	52 Common Duct Stones in 619 Operations	8.4%
1927-1928	25 Common Duct Stones in 198 Operations	12.6%

*Read in the Surgical Section of the Massachusetts Medical Society, Worcester, June 5, 1928.

†For record and address of author see "This Week's Issue," page 743.

stones are found in the gall bladder the common duct must be opened. It does mean, however, that most careful visualization of the ducts must be made to demonstrate their size, consistency and thickness, and that most careful palpation of the ducts, particularly at the lower end of the common duct, must be made to rule out the possible existence, particularly, of silent common duct stones. It is at the lower end of the common duct that stones are most apt to be overlooked, either at the time of palpation or even when the duct is opened and a search is being made for them. This is due to the fact that the duct here is often surrounded by the head of the thickened pancreas, making palpation difficult, and the duct just above the sphincter of Oddi is prone to sacculate, so that a good sized probe may readily pass by stones and enter into the duodenum, thus leading one to infer that because no obstruction is met with, there are no stones present. Should there be the slightest suspicion of the presence of common or hepatic duct stones, the ducts should be very thoroughly explored under wide exposure and direct vision as far as possible, and should there still be doubt as to the existence of stone after the duct has been exposed, the parietal peritoneum beside the duodenum should be cut, the duodenum mobilized by turning it inward, and the retroduodenal portion of the common duct demonstrated and explored for possible stones.

This procedure of exposure of the retroduodenal portion of the common duct shown in illustration I has been of value to us in that often more than half of the common duct, being retroduodenal, is exposed, permitting the incision in the duct to be made low down in it, closer to the ampulla and facilitating thus the search for and extraction of stones with the scoops and stone forceps from this point.

As a practical point in technic, we would urge that, as a matter of precaution, T-tubes or catheters which are to be placed in the common duct for drainage should not be inserted into an incision in the duct behind the duodenum, but rather into an incision in the portion of the duct uncovered by duodenum. This precaution should be taken lest the tube inserted to the retroduodenal portion of the duct and remaining there for some time, rest against the lateral wall of the duodenum, and by pressure necrosis occasion a late duodenal fistula. (See illustration I.)

We have for several years employed T-tubes in the drainage of common and hepatic ducts and when proper use has been made of them have been much pleased with them. In addition to the above mentioned precaution concerning their point of introduction, care must be exercised in the selection of the size of the tube to be employed, making sure that it is of considerably lesser size than the calibre of the duct, since tight-fitting tubes within the duct can produce destruction of the duct mucosa and sloughing of the duct itself. T-tubes are supplied by the dealers with long limbs on either end of the T portion. These should be cut down to the shortest possible transverse ends consistent with making them remain in place within

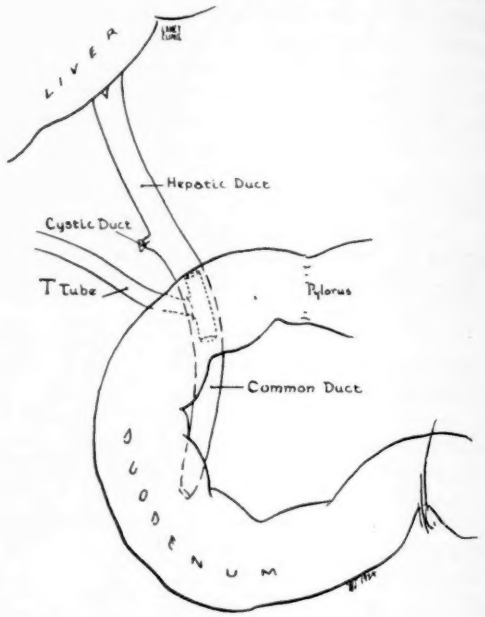

ILLUSTRATION I. Showing improper method of introducing T tube in common duct behind the duodenum and resulting in danger of necrosis of duodenum from pressure of tube against it.

the duct. (See illustration II.) It is desirable to leave as little as possible in the way of foreign material within the duct, lessening thus the danger of injury to duct mucosa.

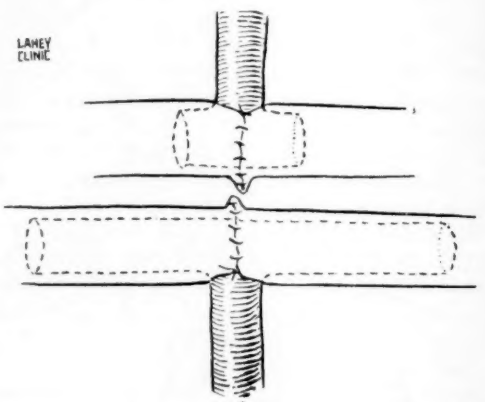

ILLUSTRATION II. Showing above proper short limbs of T tube in duct and below improper length of tube in duct.

In our experience with surgery of the bile ducts, we have permitted T-tubes to remain in the ducts either but a comparatively short time, 10 to 12 days, or for quite a long time, 2 to 3 months. In those cases having merely mechanical blocking of the duct by a stone or stones and unassociated with infection, or where silent or unsuspected stones in the ducts are found at

the time of operation upon the gall bladder, the T-tube is removed on the tenth to twelfth day, with the result that the external discharge of bile soon ceases and the patients are able to leave the hospital within three weeks of the time of operation. In cases, however, where there is present marked infection within the ducts, or jaundice associated with fever before operation, or where a reconstruction of the duct has been done about the T-tube for a stricture of the duct, we frequently send the patient home with the T-tube in place and do not remove it for from two to three months. If the T-limbs of the tube have been cut short and the tube is new and of good material, there is no danger of disintegration of the tube and no difficulty in its removal.

It is not unusual in patients who have been submitted to the operation of cholecystectomy to have them return complaining that they have had attacks of pain similar to the original attacks for which they were operated upon, and at times these attacks will be associated with jaundice of varying degrees. In a great majority of gall stone cases in which pain, and particularly pain and jaundice, recurs repeatedly after cholecystectomy has been performed, this must be accepted as due to overlooked stones in the ducts or strictures of the duct which have followed the preceding operation.

We have in our experience had to deal with eleven strictures of the main bile ducts. One has been stricture of the common duct at its entrance into the duodenum, four have been in the common duct at the point where the hepatic duct enters the common duct, three have been in the hepatic duct, two were cases in which the common and part of the hepatic duct were completely destroyed, and in one there was complete obliteration of the main biliary canal from the duodenum to well into the substance of the liver.

Most of the strictures of common and hepatic duct which have come into our hands have occurred in patients who have previously had operations upon their gall bladders, usually cholecystectomy. In nearly all of the cases there has been evidence in the description of the operation that a technical difficulty arose during the operation for removal of the gall bladder. Two of the cases had had their original operations done in the clinic and nine elsewhere. The most common point of stricture was at the junction of the cystic and common ducts, due doubtless to placing the clamp too far down upon the cystic duct so that it included a portion of the common and hepatic ducts. (See illustration III.) The next most common point of stricture has been the hepatic duct, due no doubt to the clamping of this stricture in endeavors to recover lost and bleeding cystic arteries, and the least common point of stricture was at the ampulla of Vater. In one of the cases, the common duct had completely sloughed away following an acute pancreatitis, and in one the duct had disappeared, due, no doubt, to a complete fibrosis of the entire canal. This is a strange condition which has been seen by most all surgeons who have had any considerable experience with bile duct surgery, the lumen of the canal disappearing and the canal being completely replaced by a solid cord-like structure.

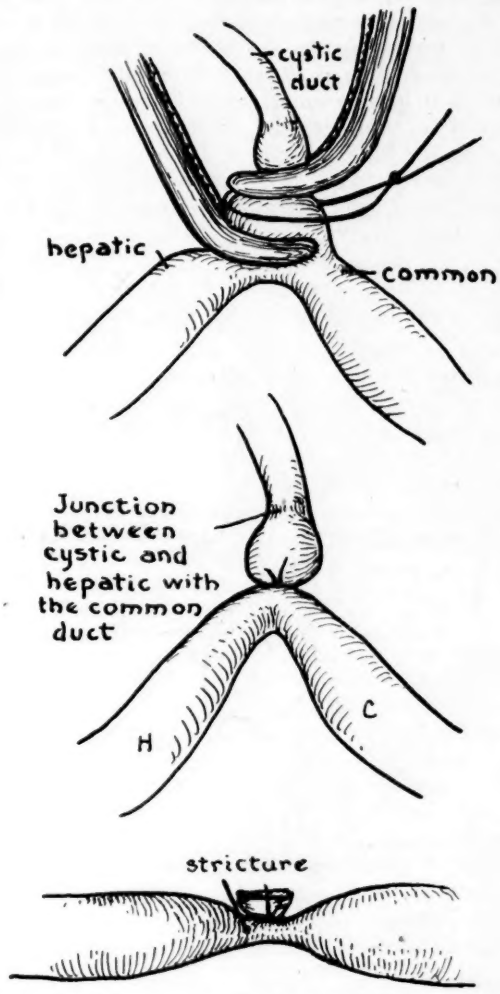

ILLUSTRATION III. Showing how the clamp and ligature may be placed too far down on the cystic duct and how it results in a stricture at the junction of the common and hepatic duct.

There is no typical symptomatology for stricture of the common or hepatic duct. The diagnosis will, of course, be obvious in those cases where following a cholecystectomy there is a history associated with operative difficulties, and in which there is either immediate deep and non-intermittent jaundice or an immediate establishment of non-closing biliary fistulae. In these cases it is plain that the main bile duct has either been ligated or cut. In those cases in which but a portion of the duct wall has been injured, however, the symptoms usually do not appear for several weeks to several months after the original operation at which the injury was done, and are in part due to an incomplete narrow-

ing and contraction of the biliary canal and, in part, brought on by the occurrence of an inflammatory condition within the ducts. When the duct is narrowed by stricture but not completely obstructed, the history is that of intermittent attacks of jaundice with or without pain, frequently with intervals of complete freedom from such attacks. If pain is present, it is usually not severe in character.

On close examination of these strictures at the time of operation, we have found them to have so narrowed the duct that it would barely be possible to pass a small probe through the narrowed part, and yet the patient has frequently gone on for long periods of time with bile making its way through this narrowed portion without sufficient back pressure to produce jaundice. The biliary obstruction in these cases is therefore in our opinion—since it is intermittent and usually without stone—due to the closure of the small canal in the narrowed duct either by the

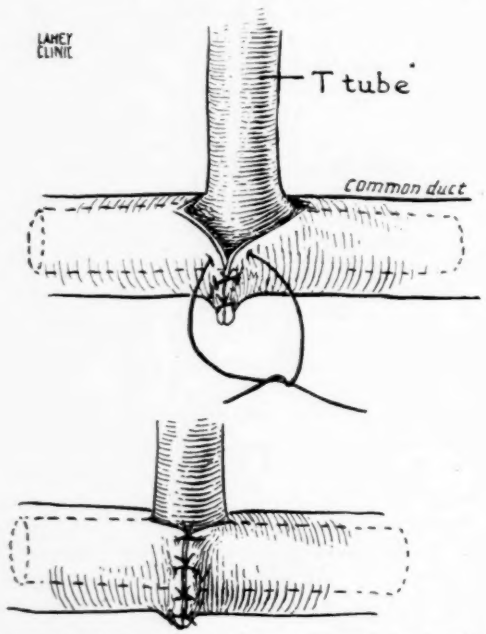

ILLUSTRATION IV. Method of suturing the longitudinal incision in a strictured common or hepatic duct about a T tube.

swelling of a superimposed infection or to the inability of the thickened bile and strings of mucus, which go with bile duct infection, to pass through the narrowed lumen.

The ideal treatment of stricture of the common or hepatic duct would be excision of the stricture and end to end anastomosis of the ducts. Unfortunately, the stricture occupies such an extent of the duct, as a rule, that its excision leaves so great a defect in the duct that the ends cannot be brought together without undue tension, and tension in the approximation of bile ducts is fatal to a successful outcome.

The next most satisfactory procedure is the implantation of the end of the hepatic or common duct into the duodenum. This can occasionally be done, although we have never had a case in which we could do it.

A majority of our cases have been those of incomplete narrowing of the common duct and have been treated by suture of the incised stricture about a T-tube. (See illustration IV.) Following the immediate recovery from this operative procedure, the tube has been left in place for at least two months, and in our series of cases this has been a most satisfactory procedure.

In the two cases which we have had in which the common and part of the hepatic duct were completely destroyed, with external biliary fistulae and clay-colored stools, all bile was discharged through the abdominal fistulae, in one case for three months and in the other for twenty months. We obtained successful results in these cases by the dissection and preservation of the fistulous canal and by implanting and anastomosing the dissected fistula directly into the duodenum, converting thus the external biliary fistulae into internal biliary fistulae. One of the cases has now reported himself well, with a gain of fifty pounds in weight six years after the operation, and the other reports herself well now, five years after the operation. Both had a few attacks of jaundice for a few months after the operation; both report themselves free from jaundice now for several years.

A method of repairing complete defects in the main bile ducts described some years ago by Arthur G. Sullivan has been employed by many surgeons where an extensive defect in the ducts is present, and many such cases are reported in the literature. This consists in the introduction of a section of rubber tubing into the open ends of the cut ducts and of wrapping around this peritoneum or omentum. We have never employed this procedure. In the course of reporting our experiences with common and hepatic duct stricture elsewhere, we have had occasion to go over the literature on this subject quite thoroughly, and in practically all of the cases in which the end results of this procedure are known, obstruction and jaundice have again recurred, due to blocking of the tube with detritus or fibrous contraction of the scar tissue in the new duct if the tubing has been passed into the duodenum. From the reports of followed cases it does not seem to us that this operation should be employed. In such late cases of complete severance of the duct as do not permit of suture of the cut end of the duct to the duodenum, the best procedure, we believe from our experience and that of others, is the production of a complete external biliary fistula, and at the end of three months or more, preservation of this canal by dissecting it out down to the bed of the liver and implantation of the fistula into the duodenum, stomach or jejunum. This was first done by Dr. Hugh Williams in 1916, but never published, and was done by us independently as a presumed original procedure, published by us

in 1922, and since repeated by several operators. The fact that Williams' case has continued well for over twelve years, ours over five and six years respectively, together with other reported cases well after the operation, make it, we believe, the procedure of choice in all irreparable large defects of the common and hepatic ducts.

The diagnosis of biliary tract obstruction due to malignancy either in the head of the pancreas or in the ducts themselves is at times quite difficult, and arrived at frequently only after considerable waiting and also by the fact that the jaundice persists without pain and deepens progressively usually without interruption. In connection with this condition, Courvoisier's Law has been of considerable value to us in arriving at a diagnosis. Courvoisier's Law is that in the presence of jaundice a dilated gall bladder is indicative that biliary obstruction is due to malignancy, while a contracted gall bladder is indicative that the obstruction is due to stone. This law as set down by its author is of value either to the surgeon or autopsyist, but it is at once evident that its positive portion—that is, when a dilated gall bladder is palpable—is the only part of the law which is of value to the clinician in preoperative diagnosis. We have therefore modified it to this extent for our purposes of preoperative diagnosis. In the presence of painless and progressive jaundice in a patient with clay-colored stools, and with a gall bladder which is so dilated that it is palpable through the abdominal wall, the obstruction is almost with certainty due to malignancy either of the head of the pancreas or of that portion of the common duct below the point where the cystic duct enters it. In such a case as this, no exploratory operation is necessary or justifiable for the establishment of the diagnosis and with any idea that the condition is permanently remediable. Operation may justifiably be undertaken in such a case only with the purpose of anastomosing the gall bladder to the duodenum or jejunum so that the undesirable effects of deep jaundice may be temporarily overcome. This operation of cholecystenterostomy, in spite of its high mortality because of lessened liver function due to the effects of prolonged biliary back pressure, is well worth while. It has permitted many patients to obtain weeks, and even months, of comfort and to die much less distressing deaths than those associated with unrelieved obstructive jaundice. When this positive portion of Courvoisier's Law, however, is not present, when in the presence of painless and progressive jaundice with acholic stools, the gall bladder is not dilated and not palpable through the abdominal wall, the possibilities of even temporary surgical relief become almost certainly non-existent. Such a predominating majority of the cases of painless and progressive jaundice which we have seen have eventually proven themselves to be due to obstruction of a malignant character, that we feel certain now that exploration in painless jaundice, except where the gall bladder is dilated so that relief by a biliary sidetracking operation may be obtained, rarely proves justifiable. One should have in mind always, however, that once in a very great while—hardly often enough, though, to lessen the weight of the previous statement—a painless common duct stone will produce a long standing jaundice of considerable depth, but very rarely with persistently colorless stools.

One of the most important factors in the mortality of the surgery of the bile ducts is the fact that this surgery must frequently be done in the presence of jaundice.

Jaundice, we know, in the light of our present conception, is the result of either impermeability of the liver cells due to infection or to mechanical obstruction to the outflow of bile within the ducts. Jaundice plays a very great part in the mortality associated with the management of lesions of the bile ducts, (1) because of the liability of hemorrhage in any patient operated upon while deeply jaundiced, due to the delayed coagulation time, and (2) to diminished liver function when the liver cells are incapacitated either by infection or by back pressure.

The first condition—delayed clotting time—may in most instances be improved and the liability of hemorrhage diminished by the administration of calcium lactate by mouth and calcium chloride by vein and occasionally by the use of transfusion.

The second condition—diminished liver function—is probably the most constant single factor having to do with mortality in bile duct operations. The effect of long standing back pressure upon the biliary tree has been beautifully demonstrated by Counseller and McIndoe. The effect of infection upon the liver cell and its lessened ability to function and withstand even moderate burdens is too well known to require repetition. There are two features which are worthy of consideration in this connection. One is that the glycogen reserve in the liver is closely associated with its functional capacity and its tolerance to added burdens; the other is the well known undesirable effect of ether anesthesia upon the liver cells whose functions have been interfered with by an associated liver infection. It therefore is obvious that the preliminary administration of glucose salt solution and the employment of a high carbohydrate diet is of value in preparing these cases for operation, and in the same way it is obvious that a form of anesthesia other than ether should be employed. This we have met by the use of high spinal anesthesia, a method which we have been employing in practically all of our abdominal cases this year with most satisfactory results. The use of ephedrine, to prevent blood pressure drops, and two comparatively new spinal solutions—the light starch, alcohol and novocaine solution of Pitkin, and the heavy glucose and novocaine

solution by means of which levels of anesthesia may be so accurately controlled—with all injections made through the second or third lumbar interspace—have made spinal anesthesia for us, so far, almost an ideal method. With this form of anesthesia, the results of which in our clinic will shortly be published by our anesthetist, Dr. Lincoln Sise, we have been able to operate upon bad risk cases and do extensive operative procedures which would not have been possible hitherto.

CONCLUSIONS

The frequency with which stones in the common and hepatic duct may be overlooked is stressed, and statistical evidence is adduced from our own experience to prove the increase in the percentage of common duct stones found with the increase in the percentage of common and hepatic ducts explored.

Drainage of the ducts may best be accomplished, in our experience, by T-tubes, and they should be allowed to remain in the ducts either but a short time, ten to twelve days, or two to three months.

Stricture of the main bile ducts are by no means rare. They are most common at the junction of the hepatic and common ducts and usually follow cholecystectomy and operative difficulties. Methods of repairing them are discussed.

In the presence of painless and progressive jaundice in a patient with persistently clay-colored stools and with a palpable gall bladder, the obstruction is almost certainly due to malignancy of the head of the pancreas or of the common duct. When with persistently acholic stools there is painless and progressive jaundice, but the gall bladder is not palpable, no operation is justifiable.

Silent common duct stones occur and may produce deep jaundice, but very rarely with persistently colorless stools.

Attention is directed to the methods of preparing jaundiced patients for operation, to the preparation of patients who have liver infection by increasing the glycogen reserve within the liver, and to the superiority of high spinal anesthesia over ether in bile duct operations on patients with liver infection.

CHAIRMAN SWEET: Most of us have from time to time during the last twenty to twenty-five years made a pilgrimage to that shrine of American surgery, the Mayo Clinic, and while there have been inspired and helped by one of the master surgeons of that Clinic. Some of us have been so fortunate as to enjoy the hospitality of the genial gentleman who is going to talk to us next, and we are very grateful to him for coming. He is today to talk to us upon the "Sequelae and Accidents of Biliary Surgery." Dr. Edward Starr Judd of Rochester, Minnesota! (Applause.)

DR. EDWARD STARR JUDD: Members of the Massachusetts Medical Society: I didn't know just how complimented to feel when I received an invitation from your Secretary to read a paper on this subject because I didn't know much at least about the sequelae, but when I stopped to think that one is usually invited to read papers because of having had some experience with things, I knew that I had had all of the accidents that could happen in biliary surgery happen to me, so I decided that that was probably the reason for extending the invitation to me to read a paper on that subject. (Laughter.)

SEQUELAE AND ACCIDENTS OF BILIARY SURGERY*

BY E. STARR JUDD, M.D., F.A.C.S.†

THE results of operation for disease of the gallbladder and biliary tract, which are more common than any other within the abdomen, as a rule are very satisfactory. The degree of satisfaction is in direct ratio to the evidence of disease found at the time of operation. Attempts to relieve remote symptoms by removing a gallbladder because there are adhesions around it or because it does not fill and empty according to the rules of the dye test will not always be followed by relief, and the unsatisfactory results should not be set down as failures in gallbaldder surgery but rather as operations performed without sufficient evidence of disease, and failure to correlate the clinical and pathologic data.

*Read before the Massachusetts Medical Society, Worcester, June 5, 1928.

†For record and address of author see "This Week's Issue," page 743.

SYMPTOMS SOON AFTER OPERATIONS ON THE GALLBLADDER AND BILIARY DUCTS

It is not uncommon following operation on the gallbladder or ducts to have certain symptoms persist for a time. This occurs regardless of whether the gallbladder has been drained or removed or whether or not the common bile-duct has been opened. Such symptoms are frequently similar to those for which the operation was performed. Sometimes they are caused from an overlooked stone, usually in the cystic duct or common bile-duct, sometimes in the gallbladder itself; more often, however, the cause is uncertain. There may be two or three attacks, usually not as severe as the original attack, and then all of the symptoms may disappear without further trouble. It is possible that during this time a stone has passed. Some surgeons interpret the symptoms as due to the passing

of a mucous plug through the duct. In some instances they are undoubtedly due to preëxisting cholangitis, and possibly to associated hepatitis or pancreatitis. Just what proportion of patients with gallbladder disease have this difficulty during their convalescence has not been estimated, but I believe it to be less than 10 per cent. While the symptoms are distressing to the patient, he can usually be assured that the difficulty will not persist. Secondary operations should not be performed in these cases at least until a sufficient time has elapsed to make certain that the complication will not take care of itself.

HEPATITIS

Actual knowledge of hepatitis is limited. Whether hepatitis is a primary lesion is difficult to determine but that it does exist coincidentally with other inflammatory lesions within the abdomen is certain. It is also difficult to determine the relationship between the inflammation in the liver and in the other viscera. Hepatitis is undoubtedly always associated with cholecystitis but often the hepatitis may be much more evident that the cholecystitis. I have operated in several cases, expecting to find definite evidence of cholecystitis, but instead found striking changes in the liver and not much sign of disease in the gallbladder itself. In a few of these cases I removed the gallbladder, believing that it was the source of the trouble and that the condition of the liver would be benefited by its removal. In certain of these cases, the symptoms gradually disappeared, in others the symptoms persisted and not much, if any, benefit has come from removal of the gallbladder. Furthermore, if the liver shows severe hepatitis in the presence of definite disease of the gallbladder with stones, removal of the gallbladder will be followed by a continuation of mild symptoms often for a year or more. There can be no question concerning the close relationship between the liver and the gallbladder, and if one is infected the other readily becomes infected. I do not believe, however, that every time hepatitis occurs it is secondary to infection in the gallbladder. Some evidence of hepatitis will be found almost every time the liver is examined in patients being operated on for inflammatory lesions within the abdomen. Under certain conditions it is undoubtedly an affection following and caused by an attack of cholecystitis.

NONCALCULUS INTERMITTENT BILIARY OBSTRUCTION

In 1924 Burden and I published an article on noncalculus intermittent biliary obstruction; twenty-four cases were reviewed in which operation had been performed after the removal of the gallbladder, for continuation or recurrence of symptoms. We believed that the most potent cause for the persistence of symptoms after cholecystectomy was the patient's delay in coming to operation. We also believed that continuation of the symptoms was probably caused by extension of the disease to the liver or pancreas, and that in spite of the fact that the gallbladder was removed, the condition continued to be active. At this time I wish to report twenty-eight additional cases of the same type. This makes fifty-two cases in which it was deemed advisable to reoperate because of persistence and recurrence of symptoms. These are only a small percentage of the many cases in which operation for disease of the gallbladder has been performed during the same interval.

SYMPTOMS OCCURRING BEFORE THE PRIMARY OPERATION ON THE GALLBLADDER

In the present series of twenty-eight cases six of the patients were males and twenty-two were females. The youngest patient was twenty-five and the oldest fifty-nine.

The duration of symptoms prior to the initial operation in the twenty-eight cases varied from one month to twenty-two years. The average duration was seven and a half years. Typical severe hepatic colic was associated in twenty-seven of the twenty-eight cases. Jaundice was noted in 42.8 per cent. Fever was present in 10 per cent. Clay-colored stools were present in 7 per cent. All of the patients complained of gaseous indigestion besides the foregoing symptoms. The duration of symptoms before the primary operation was four years longer than in the former series of twenty-four cases.

PRIMARY OPERATION

The primary operation was performed in the clinic in nine cases and elsewhere in nineteen. Complete data were available concerning the nine cases. In the nineteen cases, the information regarding the primary operation was obtained from the patient and by correspondence. According to the best information obtainable, the gallbladder was definitely diseased in all cases. Stones were present in twenty-one of the twenty-eight cases. In six, the condition was classified as chronic cholecystitis without stones, and in one case acute cholecystitis without stones. Acute pancreatitis was noted in three cases. Primary cholecystectomy was performed in twenty-four cases and in two of these the common bile-duct was explored at the same time. Cholecystostomy, which was later followed by cholecystectomy, was performed in four cases. The common bile-duct was opened, but stones were not found in any of the cases.

SYMPTOMS AFTER REMOVAL OF THE GALLBLADDER

The period since the onset of symptoms following cholecystectomy ranged from ten days to eight years. In fourteen of the cases the symptoms ensued during the convalescence and persisted up to the time of the second operation. Severe colic was the chief complaint in all cases. Fifty per cent. of the patients were jaundiced;

17 per cent. had fever, chills and clay-colored stools. It is likely that a higher percentage of patients had definite jaundice during attacks, and this would have been apparent if serum bilirubin tests had been made. The average length of time that the patient had symptoms after the cholecystectomy before the secondary operation was performed was a little more than ten years. In one case, I reoperated at the end of six weeks because of continuous increasingly severe symptoms. The longest interval between the primary and secondary operations was thirty-five years. The symptoms in many of the cases warranted the diagnosis of an overlooked or newly formed stone in the common bile-duct; it was difficult to distinguish between the two. A slight degree of jaundice suggests noncalculus disease rather than a stone in the common bile-duct; the jaundice may be so slight that it is not recognized clinically. In my first experience with these cases operation was performed on the presumption that a stone was present in the common bile-duct. With further experience, however, I believe it is possible to make a diagnosis in many of the cases.

SECONDARY OPERATION

The common bile-duct was opened and explored for stones. Neither stones nor calcareous material of any kind were found. The liver was carefully examined and hepatitis was evident in 32 per cent. The pancreas was thought to be changed in 39 per cent.; definite cholangitis was noted in 18 per cent. There were enlarged lymph nodes along the ducts in only 10 per cent. The common bile-duct was dilated in nearly all cases but it was considerably enlarged in more than 50 per cent. With increasing interest in these cases it has seemed that the ones in which the best results followed the secondary operation were those in which prolonged drainage of bile was carried out. In the first group of cases the common bile-duct was drained with a Mayo-Robson drain. This is very satisfactory if drainage is desired for a few weeks, but after this time bile seeps around the tube and it is difficult to keep the tube in place. In the last sixteen cases of the series of twenty-eight, a Deaver T-tube was placed in the hepatic and common ducts and left for at least three months. The tube was then clamped off to determine whether any of the symptoms would recur. If the bile flowed freely into the intestine without return of trouble the tube was removed. In each case, after the tube had been removed drainage of bile to the outside ceased within a few hours.

There was one death in the series. This occurred in the case in which the second operation was performed six weeks after the first. Death was believed to be due to acute cholangitis and acute hepatitis. In the first series (twenty-four cases), nineteen patients were entirely relieved by the secondary operation. In the second series (twenty-eight cases), twenty-seven patients were definitely benefited almost at once; a small proportion shows a tendency to recurrence, but I feel more strongly than ever that the procedure is justified by the results. There seems to be little doubt that biliary obstruction was the main cause of the symptoms in at least some of the cases. It is probable that inflammation in the pancreas and liver was a factor in some of the cases. Cholangitis was present in certain of the cases. It is a matter of speculation as to whether spasm in the sphincter at the end of the duct might have been responsible and that prolonged drainage relieved the condition.

I do not at present feel sure that these cases should be classified as intermittent biliary obstruction, or that they should be called sequelae of gallbladder disease. It is very likely that the condition necessitating the secondary operation was present at the time of the first operation and was a part of the initial trouble.

FISTULAS

Fistulas following operation on the biliary tract are of two types:

1. *Mucous.*—In this type there is a persistent clear watery discharge from the wound after the drain has been removed. It follows cholecystostomy usually because of stricture or overlooked stone in the cystic duct. Complete healing may take place and then after a few weeks a mucous fistula will develop. This suggests that the cystic duct was patent for a time and the stricture formed probably after removal of a stone from the duct. In such cases the gallbladder has usually been completely destroyed by the disease and it should be removed. Usually the fistula drains for a time and then closes, with the result that the gallbladder becomes distended and an abscess forms in the abdominal wall. After several seizures of this kind the condition may subside probably as a result of atrophy in the gallbladder. Delay in operating on a mucous fistula is justified if there is any reason to believe that the trouble is subsiding. The fistula may persist for years without becoming more serious.

2. *Biliary.*—Discharge of bile from the wound after operation on the biliary tract is common. Often it is a welcome sign immediately following the operation. In the cases in the clinic in which a drain was placed in the fossa following cholecystectomy, postoperative drainage of bile in varying amounts occurred in about one case in twenty. In twenty-nine cases in which the patient came to the clinic because of stricture of the common duct biliary fistula followed the primary operation. The fistulas persisted for from five weeks to five years following the cholecystectomy. In most cases the fistula had drained intermittently, and jaundice, chills, and fever occurred only when the fistula was closed. In one case bile had drained through the fistula continuously for five

years and the patient was in fairly good health. In certain of the cases in which drainage of bile was prolonged, there was apparently disturbance of hepatic function. I believe it is well to have the function of the liver carefully investigated before any attempt is made to repair the fistula. Undoubtedly in certain of the cases the fistula is due to the escape of bile from the cystic duct; in others it may be due to drainage of bile from the surface of the liver. In most of the cases it persists for a few days to a few weeks, then ceases, and there is no further trouble.

If there is a tendency for the fistula to persist or if there is jaundice and pain when the fistula is closed, this usually means obstruction of some kind in the common bile-duct. The obstruction may be due to a stone in the bile-duct, a tumor or inflammation in the head of the pancreas, a tumor at the ampulla, cholangitis with a tendency to obliterate the lumen of the duct, or to injury to the duct at the time of the operation. In operating to repair a biliary fistula, all of these conditions must be considered. If the obstruction is due to a stone and this is removed, the condition will clear up without further difficulty; if it is due to new growth in the pancreas or ampulla or inflammation in the pancreas, an anastomosis should be made between the gallbladder (if it is present) and the duodenum. If the gallbladder has been removed then the anastomosis should be made between the bile ducts and the duodenum. If the obstruction is due to stricture or obliteration of the ducts, then it is necessary to make an anastomosis between the ducts and the duodenum.

ACCIDENTS

In a consideration of the accidents occurring during operations on the biliary tract, every surgeon first thinks of injury to the common or hepatic bile ducts which sometimes occurs during the performance of cholecystectomy. I am convinced that such injury does not occur as frequently as it did formerly; it still occurs too often, possibly because of some anomaly in the excretory apparatus of the liver. The injury is now more often recognized at the time and repair instituted at once. Anomalies are not uncommon, a fact which should be kept in mind always in the performance of cholecystectomy. The injury is usually due to the fact that there is not sufficient exposure in the field of operation. Enough attention is not given to the separation of the lower end of the gallbladder and cystic duct from the surrounding structure before clamps are applied. There are two types of cases in which the injury is most likely to occur. One is the case in which there is a small contracted gallbladder and the cystic duct is not discernible. Because of the long-standing inflammatory reaction, this gallbladder has shriveled and finally contracted so that it lies underneath the common bile-duct. Unless this type of gallbladder is completely separated from all of the surrounding structures before any clamps or ligatures are applied the common bile-duct may be completely severed or ligated or a piece taken out of its side. The other type of case in which this accident may occur is that of a large distended and tense gallbladder. With increasing distention the lower end of the gallbladder is crowded down under the common bile-duct. In this position the cystic duct runs downward to enter the lower end of the gallbladder and unless this part of the gallbladder is carefully dissected away from the common bile-duct, a piece of the duct may be removed with the gallbladder.

Injuries to the common bile-duct can usually be repaired if the condition is recognized at once. If the duct is severed or traumatized so that a complete stricture develops, repair is difficult, and complete and permanent return to normal function will not be obtained in all cases. Operation for these traumatic strictures sometimes seems to be almost hopeless, and yet I believe that such operation should be performed even in the most desperate cases, and that it should be repeated in case it is not successful. After two or three operations, a reasonably satisfactory result may be obtained.

In reviewing these cases of stricture of the common bile-duct I found that in certain cases there had been no evidence of stricture for several months after the original operation. In view of the fact that the common bile-duct had been patent for several months without drainage of bile to the outside it seemed to me that it was necessary to look for some other etiologic factor in certain of the cases. In one of the cases in which cholecystectomy had been performed in the clinic two years previously, painless jaundice developed which proved to be due to complete stricture of the common and hepatic ducts. At necropsy obliterative inflammation extending throughout the extrahepatic and intrahepatic bile ducts was found. It is probable that in a definite proportion of the cases in which stricture develops following operation on the gallbladder, the cause of the condition may be obliterative cholangitis. Further evidence to support this view has been brought out recently by Miller of Baltimore in a report of a case of primary localized obliterative cholangitis of the common bile-duct. The obliteration was confined to a narrow area and was corrected by cholecystduodenostomy. Included in our series of 105 cases of operation performed for stricture of the common duct, are two cases in which no former operation had been performed. It is likely that in these cases the condition was a result of obliterative cholangitis.

It is well-known that considerable reaction results in the surrounding tissues from a foreign body that has been left in the peritoneal cavity. In many cases following cholecystectomy it is necessary to drain the pouch. It does not seem

necessary, however, to use a great deal of gauze, or a large heavy rubber tube that might make pressure on the ducts and result in inflammatory reaction. I believe it is possible for stricture to result from this sort of tissue reaction.

In the early surgery of the gallbladder it was not uncommon for the stomach or the duodenum to be traumatized; sometimes the portal vein and even the hepatic artery have been traumatized. Such injuries are rarely heard of now. It is not unusual, however, to find the gallbladder joined to the duodenum or colon by a fistulous tract so that its removal leaves an opening in the intestine which must be repaired. Such repair is not difficult and is usually satisfactory provided the drains are kept away from the suture line.

Occasionally sudden death may follow operation on the gallbladder and there is no cause or explanation for it. Some have explained it by "liver shock," whatever that may be. The condition is most likely to occur following a prolonged and difficult operation in which there may have been considerable trauma to the liver. Trauma should be avoided as much as possible but should the liver be traumatized and torn it is probably better to remove small fragments than to leave them with slight attachments. This was suggested by the sudden death of experimental animals when a piece of their own liver was deposited in the peritoneal cavity.

DISCUSSION

In reviewing experiences and results of operations on the gallbladder and biliary tract, one is probably too deeply impressed with the sequelae and the results of accidents, and not enough impressed with the fact that most operations for these conditions are followed by complete and permanent relief from symptoms. As in many other fields of surgery in which progress takes place, attempts are constantly being made to cure remote and unreasonable symptoms by removal of the gallbladder. Fortunately this phase of our experience has practically been passed, and it has been found that the basis for operations on the gallbladder must rest on clinical and pathologic observations.

In this series attention is again called to a group of cases in which symptoms continued or recurred following removal of the gallbladder. Secondary operations were performed in most instances with the expectation of finding an overlooked or newly formed stone in the common bile-duct, but in none were any stones to be found. Most of the patients, however, were permanently relieved by prolonged drainage of the common bile-duct. Removal of the gallbladder at the primary operation undoubtedly cleared up only a part of the trouble; the disease still persisted in the ducts, liver or pancreas. The fifty-two cases representing the two series are such a small percentage of the entire group of cases of diseases of the gallbladder that it does not seem advisable to suggest that the common bile-duct should always be drained when the gallbladder is operated on.

Not all strictures of the common bile-duct are due to injury at the time of the operation; some of them may be due to obliterative cholangitis. If a stricture does occur in the common bile-duct either from trauma or inflammation it presents one of the most serious conditions with which a surgeon has to contend. After proper preparation of the patients who are usually deeply jaundiced, operations for the relief of the stricture should be undertaken. Each one of these cases is a problem in itself but a higher proportion of patients are being benefited and permanently relieved than was formerly believed to be possible.

CHAIRMAN SWEET: "Pancreatic Complications of Biliary Disease" will be discussed by our beloved and respected Daniel F. Jones. (Applause.)

DR. DANIEL F. JONES: I am afraid I have brought up a subject of very little interest to most of you because I believe that only very few of you see pancreatic disease. However, I shall go ahead with it.

RELATION BETWEEN GALL BLADDER DISEASE AND PANCREATITIS*

BY DANIEL FISKE JONES, M.D., F.A.C.S.†

THAT there is some relation between gall bladder disease and pancreatitis has long been recognized. The frequency of association of the two conditions has been estimated at from 20% to 50% and careful routine examination of the pancreas and gall bladder as carried out at present may give a still higher percentage. While all agree to the association of these two conditions, the significance of the association has caused considerable controversy and up to the present time it has not been settled definitely.

There would be little excuse for this paper on the ground of new evidence but it may be of some value to try to clarify the situation somewhat because of the great increase in the number of so-called chronic cholecystitis cases which, according to the belief of some, is a serious condition that may lead to pancreatitis and many other conditions.

Frequent excellent reviews of the literature have appeared which make it unnecessary to go

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†For record and address of author see "This Week's Issue," page 743.

into the various experiments; suffice it to say that at the present time there are two accepted theories as to the relation of gall bladder disease to pancreatitis.

(1) The theory of the retrojection of bile into the pancreatic duct as suggested by Opie and enthusiastically supported by Archibald.

(2) The theory of infection of the pancreas from the gall bladder through the lymphatics.

Before discussing these theories the writer wishes to set forth clearly some of the clinical and pathological features of what appears to him to be two entirely different types of pancreatitis which may aid in clarifying the situation. In the first group we have that dramatic abdominal lesion, acute hemorrhagic pancreatitis. A perfectly healthy, usually rather obese, individual is suddenly seized with severe abdominal pain, and shock out of proportion to the pain and physical findings. At operation within a few hours of the onset the abdomen is found to contain bloody fluid and everywhere there are areas of fat necrosis. There is marked tumefaction in the region of the pancreas and the pancreas and its fatty capsule are infiltrated with blood and areas of fat necrosis.

Microscopic examination of the pancreas in these cases shows a destruction of the parenchyma and infiltration of the interstitial tissue. Death occurs in about 50% of the cases. There may or may not be gall bladder disease that can be made out.

In another group of cases the patient has frequently had previous attacks of gall stone colic, or cholecystitis; he is usually operated upon for gall bladder disease. At operation a definite lesion of the gall bladder is found. There is no fluid in the abdomen and no fat necrosis. The pancreas, usually the head, is said to be thickened and hard. A cholecystostomy or cholecystectomy will relieve the patients completely. This we call pancreatitis, but it is often said not to be present by the pathologist. When present there is a definite thickening of the interstitial tissue and probably of the fatty capsule. There is no involvement of the parenchyma of the gland.

The microscopic findings in the acute haemorrhagic type have been demonstrated to be an acute necrosis of the parenchyma, with secondary changes in the interstitial tissue, while in the group of cases associated with gall bladder disease, so far as the writer is aware, there is no evidence to show that there is an acute inflammation of the interstitial tissue, nor is there any parenchymal necrosis.

If we admit that there are two types of pancreatitis in one of which the process starts in the parenchyma and is a destructive process, and another in which the process starts in the interstitial tissue, and is simply a chronic inflammatory process, never destructive except in rare instances when it may possibly go on to abscess formation, we may find the two theories as to the method of production will apply to these two types of pancreatitis.

Let us consider the evidence in support of the two theories as to the cause of pancreatitis. Fitz in his monograph in 1889 suggested "gastroduodenitis" as the cause and by doing so intimated that the route of involvement was through the ducts. Later the presence of gall stones was noted in about 50% of the cases of acute pancreatitis, but how the gall stones were related to the pancreatitis had not been explained. Much experimental work has been done and it has been demonstrated over and over again that various substances, the most important of which are infected and changed bile, and duodenal contents, if injected into the pancreatic duct will produce parenchymal necrosis that is typical acute haemorrhagic pancreatitis. It remained for Archibald to prove that many of these substances injected into the pancreatic duct, under a pressure at which bile is secreted (about 350 m.m. of water) and a pressure which the sphincter of Oddi at the papilla will maintain, would cause acute haemorrhagic pancreatitis. If more pressure were needed, Judd and Mann proved that it could be produced by retching and straining.

Opie reported autopsy findings in 1901 which seemed to show the relation of gall stones to the disease. In a case of acute haemorrhagic pancreatitis he found a stone impacted at the papilla in such a way that the biliary and pancreatic ducts were converted into one system. Many such cases have since been reported. This might account for the cases in which gall stones were present, but they were not always present, Archibald therefore carried out experiments which proved that the sphincter of Oddi at the papilla when in spasm would act the same as a stone and maintain a pressure equal to that at which bile is secreted. The opponents of the theory of the retrojection of bile then showed that the junction of the common and pancreatic ducts was so arranged that a stone or spasm of the sphincter could convert the two systems into one in only a small percentage of individuals, but even the percentage of individuals in which it was possible was far greater than the percentage of pancreatitis cases.

The effect of the activation of pancreatic secretion is shown clinically in various ways.

In pancreatic fistulae without bile or duodenal contents the secretion has no effect upon the tissues of the sinus or the skin. In those rare cases in which the duodenal contents drain backward through the common duct and out the sinus after choledochostomy, it digests the skin quickly with rapid loss of weight and strength.

In a case seen many years ago with a biliary sinus a stone would apparently block the papilla occasionally, forcing a dark changed bile back through the sinus. This always put the patient in severe shock and the skin about the sinus was digested in a very few minutes. Is it difficult

to imagine after such experiences that activated pancreatic secretion can be the cause of acute haemorrhagic pancreatitis?

But we must now consider the theory of infection through the lymphatics from the gall bladder so warmly advocated by Deaver. This theory was suggested in 1899 by Klippel and brought into prominence by Mangeret in 1908. Bartels and Franke have shown that there is an intimate anastomosis between the pancreatic and biliary lymphatics. Barber and Graham, and Peterman produced a cholecystitis experimentally and found an inflammatory change and bacteria in the interstitial tissue of the pancreas, but entirely without or with only a negligible amount of parenchymal necrosis.

Archibald has always been opposed to this theory on the ground that it is "unpathological" as retrograde infection is never seen in other regions.

He and Kauffman lessened the value of Graham and Peterman's experiments by repeating them and obtaining the same results so far as the pancreas was concerned but they also found identical changes in the kidneys, heart, spleen, and lungs, and recovered organisms from the heart blood in four out of five cases. It must be said, therefore, that acute interstitial pancreatitis has been produced experimentally in acute cholecystitis only in the presence of a bacteremia and that consequently a hematogenous origin must be assumed. Kauffman by ingenious experiments tried to prove that pancreatitis could be produced through infection of the gall bladder lymphatics but failed completely. The theory of lymphatic infection of the pancreas is, therefore, not well supported by experimental exidence and there is some clinical evidence which tends to disprove it. Is it not strange that so few cases of acute hemorrhagic pancreatitis are associated with evident acute infections of the gall bladder, and such a large proportion of cases are found associated with the so-called chronic cholecystitis in which only a few round cells and an occasional bacterium are found in the wall of the gall bladder?

Another clinical fact is that gall bladder disease is much more frequent in women than men which would lead one to believe that the same could be said of pancreatitis if the infection theory is true, but we find the reverse in pancreatitis.

It may be definitely stated that acute haemorrhagic pancreatitis can be produced at will by the injection of changed bile or duodenal contents into the pancreatic duct, but it has never been produced by infection from the gall bladder or elsewhere.

By giving each of these theories the most generous interpretation the evidence allows, there is still a considerable number of cases which fall definitely without the province of either. The writer feels that not enough significance has been attached to the fact that about 50% of the cases of acute haemorrhagic pancreatitis, similar in all gross respects to those described, have no demonstrable gall bladder pathology at operation. Opie in 1901 collected four cases from autopsy records, and we have just had a fifth in which the pancreatitis with parenchymal necrosis was localized about a duct, either that of Wirsung or Santorini, which opened independently into the duodenum.

One can easily conceive of duodenal contents entering an unprotected duct which enters the duodenum. Eliot stated that the pancreatitis occurred in his patient after a long period of vomiting and retching and was localized definitely about the duct of Santorini which was the main duct of the gland and opened directly into the duodenum.

The matter cannot be discussed in detail here but there is much evidence to indicate that the necrosis is produced by the activated proteolytic enzyme of the pancreatic secretion. Many agents seem capable of this activation, but the duodenal contents is the normal and most potent one. The repeated demonstration of parenchymal necrosis as the primary lesion in acute pancreatitis agrees well with the duct as the common route of injury.

If we now go back to the two clinical types of pancreatitis as described above we will find that the two agree with the types produced experimentally by the retrojection of bile or duodenal contents into the pancreatic duct and to infection from the gall bladder.

This discussion is of value only insofar as it leads toward prevention and aids in the treatment of the disease.

If we accept the theory of retrojection of bile or duodenal contents as the cause of pancreatitis the only preventive measure is the removal of gall stones when present. If the disease is already established, two procedures should be carried out; first, removal of gall stones if any are present, and secondly, relief of any possible increase of pressure in the biliary system by drainage.

If, on the other hand, the theory of infection of the pancreas from the gall bladder, is accepted, the only rational procedure would be removal of the gall bladder for prevention, and for the treatment of the disease when already present.

The particular interest at the present time in this theory is because of the great increase in the number of cases of chronic cholecystitis, a disease which produces no definite group of symptoms, presents no gross pathology, and is diagnosed very largely by the Roentgenologist. When the gall bladder is examined the pathologist finds a few round cells and an occasional bacterium in the wall.

This type of chronic cholecystitis has increased so rapidly that in many clinics cholecystitis without gall stones is responsible for over 50% of the cholecystectomies. Many of the advocates of the infection theory tell us that this is a dangerous condition which may cause pancreatitis, among many other things.

If this condition is such a serious menace it would appear necessary, at first glance, to remove every gall bladder which might even be suspected by the Roentgenologist. But if we consider the percentage of acute haemorrhagic pancreatitis cases among the so-called cases of chronic cholecystitis, it will be very easily seen that the mortality from simple cholecystectomy would be much greater than from pancreatitis. Nor can we forget that bacteria will continue to be carried to the liver whether the gall bladder is removed or not and we believe that infection of the pancreas from the liver would be just as reasonable as from the gall bladder itself. A piece of clinical evidence which suggests that removal of the gall bladder is not necessary to prevent pancreatitis is the result of the early operations for cholecystitis. The first successful cholecystostomy in New England was done by Dr. M. H. Richardson in 1889 and nothing but cholecystostomies were done for many years. The great majority of these cases were infected and badly infected and it is difficult to believe that this infection entirely cleared up with drainage of the gall bladder. During all the years that cholecystostomy was done, and many cases are still alive, I have never seen a case of pancreatitis follow this operation. While within fifteen years I have seen two cases, one a pancreatic abscess and the other an acute pancreatitis follow cholecystectomy, one after several months and one after six years.

At present it is our belief that gall stones should be removed with the gall bladder when found, if there are no contra-indications. We believe that there is no evidence whatever to prove that the cases of so-called chronic cholecystitis, in which no gross pathology can be demonstrated, and the cholesterol gall bladders, have any causative relationship to acute hemorrhage pancreatitis, and if these gall bladders are to be removed, it must be done for some other reason than the prevention and cure of acute pancreatitis.

We believe that, considering all the facts at our disposal, the treatment of *chronic* pancreatitis should be to remove any source of infection and drain the biliary system for a period of at least two weeks.

In acute hemorrhagic pancreatitis we believe that Archibald's theory should be our guide, and drainage of the biliary system established by cholecystostomy, cholecystectomy and drainage of the common duct, or by cutting the sphincter of Oddi.

In addition to this, we believe that the capsule of the pancreas and fatty capsule should be drained. If the patient is in bad condition drainage of the fatty capsule alone is sufficient, if in better condition drainage of the capsule and cholecystostomy, and if in sufficiently good condition and cholecystectomy is indicated, then removal of the gall bladder and drainage of the common duct. Patients with acute pancreatitis are rarely, if ever, in sufficiently good condition to permit cutting of the sphincter of Oddi, as suggested by Archibald.

CHAIRMAN SWEET: Our Secretary has been fortunate enough to induce one of our medical friends to stray from his usual haunts and come here this morning and discuss for us the medical aspects of biliary disease—Dr. Franklin White of Boston! (Applause.)

SOME MEDICAL ASPECTS OF THE DISEASE OF THE GALL BLADDER AND BILE PASSAGES*

BY FRANKLIN W. WHITE, M.D.†

MUCH new work has been done in the last decade on the physiology of the liver and gall bladder, and new functional tests have been developed; such as tests of filling and emptying of the gall bladder and of the concentration of bile, studies of cholagogues and of liver excretion, studies of the origin of bile and the meaning of jaundice. This new work has had an important effect on diagnosis and medical treatment. In this short time we can only emphasize some of the more important points.

PHYSIOLOGY

The liver is unique in that so few substances stimulate its secretion; food and bile salts appear to be the only important cholagogues. Bile is secreted by the liver more or less continuously and most of it enters the gall bladder during fasting as a result of the closure of the common duct and is stored and concentrated in the gall bladder by the absorption of water during the fasting period. In the digestive period the gall bladder empties the stored bile more or less completely but bile also passes directly into the duodenum from the liver. Thus we see that only part of the bile secreted enters the gall bladder.

There is still some doubt about how the gall bladder empties. Meltzer's theory of contrary innervation causing a simultaneous contraction of the gall bladder and relaxation of the duct sphincter remains unproved and has been rather discredited by the work of Carlson, Ivy, Graham, Whitaker and others. It has been shown that the gall bladder works equally well with all its nerves cut, which supports Ivy's theory that

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†For record and address of author see "This Week's Issue," page 743.

emptying of the gall bladder is caused by a hormone from the digestive tract which reaches the gall bladder through the blood.

One thing is sure, namely; that magnesium sulphate is much inferior to food, especially fats, in making the gall bladder empty. With magnesium sulphate we get slight or partial emptying, with fatty foods the emptying is far more complete. These facts are interesting in connection with Lyon's method of biliary drainage.

Whether the gall bladder empties by external pressure or by the elastic recoil of the distended organ or by muscular contraction or by washing out the gall bladder by fresh bile is not settled yet. It may well be by a combination of some of these factors.

PATHOLOGY

We have long recognized the importance of stasis and infection in gall bladder pathology. Now we recognize the importance and frequency of changes in metabolism. The old fashioned strawberry gall bladder is now properly called the cholesterol gall bladder. It is quite common. Menzer at the Mayo Clinic found cholesterosis in 22% of 14,000 gall bladders removed at operation, and in 37% of 1647 consecutive autopsies.

We have an increase of cholesterol in the bile with no infection at the start, with deposits of cholesterol in the muscosa which later become the nuclei for cholesterol stones.

An increase in cholesterol is especially associated with a rich diet, with obesity and with pregnancy. McMaster has shown that the cholesterol in the blood and bile is greatly increased in each period of rich diet. Menzer found at autopsy that 70% of very fat people (weighing over 210 pounds) had a cholesterol gall bladder. We know that the cholesterol in the blood is doubled in the ninth month of pregnancy, and that a very high per cent. of women having gall stones have borne children. Aschoff has suggested that women who have a hyper-cholesterolemia after delivery and who do not excrete some of their fat in the milk by nursing their babies are likely to develop gall stones.

The cholesterol gall bladder has some peculiar features; it was found unexpectedly in most of Menzer's autopsy cases, 87% of them had no history of gastro-intestinal disease and he suggests that it may be an unimportant disease affecting a large per cent. of adults without their knowledge. On the other hand this apparently simple lesion may cause much distress or severe pain in many patients, who are entirely relieved by removal of the gall bladder.

A few other conditions should be mentioned as especially favoring stasis or stone formation. Whitaker has found that if the gall bladder is left in a partly collapsed state for long periods we have a condition favoring concentration of the bile and precipitation of solids. This may result from (1) too frequent meals which keep the gall bladder almost empty or (2) insufficient sphincter action which prevents refilling of the gall bladder. Stasis may occur with poor tone of the gall bladder in asthenia and chronic debilitating disease. Infection in the wall of the gall bladder starts a vicious circle by inhibiting filling and emptying of the organ and causing stasis.

Hepatitis is an important condition commonly associated with a diseased gall bladder. This is found by pathologists and seen by surgeons at operation and at times shown by liver function tests.

Counseller has vividly shown the remarkable dilatation of the bile ducts within the liver following obstruction of the common duct. Weber has noted the close resemblance between liver and kidney in this respect and a new term hydrohepatosis has been coined by Rous and McMaster analogous to hydronephrosis to describe the progressive dilatation of the whole duct system with its atrophy of glandular cells, infection of retained secretion and general sclerosis.

Counseller has well suggested that Courvoisier's law applies as well to the whole biliary system as to the gall bladder and common duct. The dilatation of the gall bladder is a good index to the degree of dilatation of the whole biliary system; in the small, contracted gall bladder the ducts are not much dilated and are more or less infected following common duct obstruction. With the dilated, thin walled gall bladder in pancreatic cancer goes a tremendous dilatation of the biliary tree within the liver without infection.

DIAGNOSIS

In diagnosis the most valuable points are (1) a careful history with the ordinary physical examination including examination of the feces in the jaundiced cases, (2) the Roentgen Ray examination, especially the Graham test. We consider other methods such as Lyon's biliary drainage the bile index and van den Bergh and liver function tests as minor factors in diagnosis.

The History

We shall pass rather briefly over the history in spite of its importance as the usual symptoms and signs are well known, and I will take up more fully the newer kinds of physical examination especially the Graham test, liver function and bile tests and the examination of jaundiced patients.

The frequency of gall bladder disease has been emphasized, 5-10% of all women at post mortem examination have gall stones and no doubt many more have had lesser grades of gall bladder disease. It is evidently more important in middle life than duodenal ulcer and the appendix together, especially in women, and apparently no important disease in the abdomen has been so often overlooked in the past.

The desirability of early diagnosis has been stressed, before we have stones, jaundice and typical colics and before complications of all

kinds have developed. This ideal early diagnosis is difficult and it is easy to see why the pathological gall bladder has been so often overlooked. Fully half the cases have no definite local symptoms, only vague, abdominal distress, gas, heartburn or nausea. The signs are often vague and we have had few laboratory data till recently and the X-ray in the past has only detected about 50% of the advanced pathology. For this reason the newer functional tests are very welcome.

We have several types of cases (1) those with typical colics, (2) those with moderate local grumbling pain or soreness and (3) those with vague indigestion without local symptoms.

The *first group* with typical colics are few, not over 15-20% of the total. They have sharp pain in the epigastrium or right upper quadrant, running around the right side with vomiting during attacks of pain. Such cases often have stones, but the pain may be just as severe from spasm or infection in the cases without stones. *Recurring* similar attacks of severe pain which may waken the patient at night and leave the abdomen sore for several days are usually due to organic disease and cannot be explained by "ptomain poisoning" or acute indigestion or a neurosis.

The severity of the pain is unlike the average peptic ulcer and cannot be relieved by alkalies or atropin, but requires morphia. The pain is not referred in a constant way. In some it is entirely local in the gall bladder region, in some it is typically referred around the right side and to the right shoulder, in others straight through to the back and right scapula, and in a few to the left side.

The *second group* with local grumbling symptoms is a much larger one, about 30% of the total. Here we often find a thick, chronic gall bladder and cystic duct obstruction with or without stones. The patient has soreness or a dull ache in the gall bladder region. Distress or heartburn is usually irregular with little relation to meals, unlike the usual hunger pain or distress in ulcer.

The *third group* of cases is the largest and the most difficult to diagnose, namely; those with vague indigestion without local symptoms. They make up about 50% of the total. The patient complains chiefly of belching of gas and distress; nausea, regurgitation of food and heartburn are common. They feel "bilious" but rarely are jaundiced. They masquerade as intestinal indigestion and gastric neuroses.

Physical Signs

The patient is often a woman of forty to sixty, although with greater care and skill we shall recognize cholecystitis more and more in the twenties and thirties when the trouble begins. Jaundice is a very valuable sign when present. Unfortunately for diagnosis it is only present in about 5 to 10% of the cases. Surgical statistics often give much higher figures even 20 or 30% or more. This applies only to the severe chronic cases coming to rather late operation, not to the whole group. We will take up jaundice more fully in another paragraph. We may or may not have local tenderness or resistance over the gall bladder. Spasm may be absent with serious inflammation or even gangrene. Fever or chill shows active infection. Fever may be absent in cholangitis in weak people.

The gall bladder itself is palpable in only 1 or 2% of cases. It is usually out of reach under the liver unless quite large, especially in persons with a wide costal angle. In a large per cent. of the cases with stones the gall bladder is smaller than normal. A palpable gall bladder is always due to some complication, empyema, cystic duct obstruction with mucocele, or cancer. Courvoisier's law that 80% of enlarged gall bladders are due to pancreatic cancer is usually confirmed at operation or autopsy, but its value in ordinary examination is greatly limited by the fact that only about a quarter of such gall bladders are palpable during life. A positive finding is valuable, a negative not. Furthermore a mobile lobe of the liver in thin patients often simulates an enlarged gall bladder.

There is nothing distinctive about the gastric contents. Free HCl is frequently normal or low, sometimes absent; in a small group there is high secretion from reflex irritation. In obstructive jaundice the urine is bile colored and the feces clay colored and fatty. This is in sharp contrast to the abundance of bile pigment in the feces in most jaundiced cases of hepatitis. Occult or gross blood in the stool is much more common in peptic ulcer than in gall bladder disease, but is occasionally found in the latter even without jaundice.

Jaundice

Jaundice is a very interesting condition and is not yet fully understood. It is our most striking tangible sign of liver disease or disturbed function. When a patient has jaundice our first thought is to classify the case as medical or surgical. This usually requires a short period of intensive study which should be begun at once so that obstruction, if present may be promptly relieved and we may avoid the marked dilatation of biliary passages and pressure atrophy of the liver cells which may follow (hydrohepatosis, biliary cirrhosis, etc.) If disease is limited to the gall bladder the jaundice is usually transient, though with empyema of the gall bladder, inflammation and edema of the adjacent ducts may be severe enough to cause it.

McNee's classification of jaundice is a practical one (1) obstructive (2) intrahepatic (toxic or infective) and (3) hemolytic. The diagnosis will be aided by a study of (1) the presence or absence of pain and its character and the age of the patient, (2) the quantity of bile found in the intestine by examination of the feces or even better by drainage of the duodenal contents, (3) the bile pigment in the blood found by the icteric

index or van den Bergh methods, and the fragility test of the red blood cells.

Pain is usually present in surgical jaundice. Cancer of the pancreas is the exception to this rule. It is typically present in stone in the common duct. I have only seen two or three cases without pain. Intermittent or recurrent jaundice with pain especially if associated with residual tenderness and with fever or chills usually means a common duct stone. Pain is usually absent in hemolytic and intrahepatic jaundice and in cases of external pressure on the common duct.

The greatest difficulty in diagnosis is found in well marked cases of prolonged jaundice without pain. It is usually easy to rule out hemolytic jaundice. The typical picture is low grade jaundice of long duration (months or years) in a young person with plenty of bile in the feces and none in the urine, no pruritus, a moderately enlarged spleen, increased blood fragility and a positive indirect van den Bergh test.

Then we have to decide whether the jaundice is intrahepatic or due to silent common duct stone, or to the pressure of a pancreatic tumor, usually cancer. Other cancers of the bile ducts, or papilla or primary of the liver are much more rare. Age is important; under 35 cancer of the pancreas is extremely rare and the diagnosis of intrahepatic jaundice is almost always correct (infectious hepatitis or "catarrhal jaundice", salvarsan hepatitis, acute or subacute yellow atrophy of the liver, etc.)

Over 35 the presence or absence of bile in the intestine is very important in diagnosis. In the early stages of intrahepatic disease (infectious hepatitis) there is usually a cessation of bile flow into the bowel for a few days, but after that we usually have moderate jaundice with plenty of bile in the bowel. Pancreatic cancer on the other hand usually closes the common duct quickly, completely and permanently, causing a progressively increasing jaundice. In the painless, marked jaundice of middle age it is a good working rule that if biliary drainage shows no bile on several successive days it is usually safe to diagnose cancer or at least to advise an exploration. It is very rare to find painless jaundice with a palpable gall bladder which is not due to cancer.

Finally it is very important in any case of unexplained jaundice to search the gastro-intestinal tract thoroughly with the X-ray for possible cancer. Metastatic cancer from the portal system is the commonest cancer of the liver.

We have a great responsibility in making the diagnosis as we do not wish to advise operation in pure cholangitis, hepatitis or biliary cirrhosis or to refuse operation in a silent common duct stone or to deprive some patient of the benefit of an anastomosis of the gall bladder to the stomach or bowel in pancreatic cancer. Cases where the diagnosis remains doubtful after careful study and which can be prepared for operation are probably better off with an exploratory laparotomy.

Some recent tests for bile in the blood and for liver function deserve mention. They are interesting in many diseases of the liver, but not diagnostic as a rule in gall bladder disease, either with or without stones, if jaundice is not present. The associated hepatitis is too limited in the earlier stages of disease to cause much change in liver function. We use the tests for bile in the blood in cases with jaundice or suspected latent jaundice and the brom-sulphphthalein test of Rosenthal in cases without jaundice. In jaundice cases the two tests run closely parallel, that is lowered liver function closely follows the increasing degree of jaundice.

Bile in the blood serum

The two standard methods are the icteric index and van den Bergh tests. The icteric index is very simple especially when obtained by capillary tubes with a little blood from the ear as described by Davis. This great simplicity has the advantage of leading to its frequent use. The van den Bergh test takes a little more time and has the advantage of distinguishing hemolytic from obstructive jaundice.

Bile in the blood serum rises and falls earlier than bile in the skin, and these tests also enable us to follow the course of jaundice and tell whether it is increasing or lessening more accurately than merely looking at the patient. Latent jaundice which is detected in the serum and which does not show in the skin, even though brief and scanty may be occasionally helpful in diagnosis if found after an attack of obscure abdominal pain. The hepatitis accompanying gall bladder disease is not usually extensive enough to cause much change in the serum.

Liver function tests

One of the simpler and best of recent tests is Rosenthal's brom-sulph-phthalein method. The dye which comes in ampoules is injected into an arm vein and blood drawn from the vein of the other arm in half an hour, and the dye retention tested by a colorimeter.* We have used this test in cases without jaundice and found it so often within normal limits that it had little value in diagnosis especially in the earlier or average case. This agrees with Greene's results in a large series of tests using phenoltetrachlorphthalein. In the later and more serious cases it has considerable value to the surgeon in deciding about the operability of the patient. The cases with poor liver function and high dye retention are poor surgical risks and usually need preoperative treatment with glucose.

Graham has obtained quite different results using large intravenous doses of phenol-tetra-

*Ampoules and colorimeter are supplied by Hynson, Westcott and Dunning, Baltimore.

iodo-phthalein combining it with cholecystography and using about eight times as much dye as is given for the ordinary liver function test. About 90% of patients with cholecystitis, even without jaundice showed dye retention above normal. Graham also found real differential value in various conditions causing jaundice; for example the dye retention was much less in obstruction due to malignant disease than where due to stone, and most of all in infectious hepatitis (catarrhal jaundice).

Lyon's Biliary Drainage has been used for about ten years, and contrary to expectation its diagnostic value is not settled yet and there is still some controversy about the physiology on which the method is based. Lyon considers it natural to examine the bile for diagnosis in diseases of the gall bladder and liver just as we examine the urine in diseases of the bladder and kidneys. It has been especially used with the hope of making an early diagnosis at a time when other methods gave little help. There is undoubtedly something in it. The discovery of an abundance of bile stained pus cells and epithelium, of bile stained colonies of bacteria, of showers and clumps of calcium bilirubin or cholesterin crystals must mean disease. The method will also show clearly the presence or absence of bile in the bowel, so valuable in the diagnosis of the cause of painless jaundice. The source and significance of "B bile" is rather indefinite. There seems little doubt that the greater part of the bile obtained during drainage comes directly from the liver and not from the gall bladder.

My impression is that the method is much less used than a few years ago and that many hospitals and private clinics have largely given it up after a considerable trial. There is a limit to the amount of profitable laboratory work which can be done in a gastro-intestinal case. We have the gastric contents and feces, the X-ray examination with barium meal and Graham Test, the icteric index and liver function tests, and there is a tendency for biliary drainage to be left behind as not worth the extra time it takes.

Cholecystography

I will pass over the older Roentgen ray work with which you are all familiar and which used to discover about 50% of the pathological gall bladders in the operated cases, by the finding of stones or adhesions or an occasional dense gall bladder; all rather late pathology. Cholecystography has made a great step forward, it is easily our best laboratory test with a *positive* diagnostic accuracy of 95-98% *in the operated cases.* The test shows gross pathology and more important still it gives clear evidence of the two best known functions of the gall bladder, the concentration of bile and its emptying into the bowel in the digestive period. This increases its clinical value because disturbed function is usually the earliest and one of the most dependable signs of all kinds of gall bladder disease, whether inflammatory, metabolic or due to new growth.

The technique is becoming standardized and we hear less discussion about the preparation of the patient, the kind of capsules, whether coated or not, or the use of an emulsion, the oral or intravenous method, etc.

The diagnostic points are, (1) the discovery of stones, the most definite sign but not the most common; (2) absence of the gall bladder shadow the most common and important sign; (3) a faint gall bladder shadow, the next most common sign which is often difficult to interpret. Graham has emphasized that his test is fundamentally a test of function and while faint or absent gall bladder shadows may be due to poor excretion of the dye by the liver or to blocking of the cystic duct which keeps the dye out of the gall bladder, yet practical experience shows that faint or absent shadows are almost always due (in approximately 90%) to poor function of the gall bladder and lack of concentration of the bile; (4) deformities of the gall bladder itself which are rather rarely found and consequently of small practical importance; (5) negative shadows of soft cholesterol stones which are rather rare but valuable when found. A pathological gall bladder containing soft stones is almost always diagnosed by abnormal function (lack of a normal gall bladder shadow). In only about 1/10 of these cases does the gall bladder show a normal or fairly dense shadow in which soft stones themselves are seen; (6) delayed emptying is a lesser sign; (7) a normal gall bladder shadow perhaps the least reliable of all the signs, which we will speak of later.

The chief sources of error are poor Roentgen technique, poor absorption of the dye with the oral method, the cases with only microscopic changes in the gall bladder, the asthenic cases with poor function without actual gall bladder disease, the faint gall bladder shadows which are hard to interpret, the mottling of the gall bladder shadow with intestinal gas simulating negative stone shadows, the large gall bladder shadows which are wrongly called pathological. We must add that adhesions may be very extensive and show no sign.

Limitations

Everyone knows the high value of the test, it is used everywhere, thousands and thousands of tests are now made each year and it is no discredit to this remarkable method to have some limitations. The figures which show 97-98% accuracy of the method suggest that we can divide normal and abnormal gall bladders into two groups with only 2 or 3% of error. This is not really true. The percentages seem excessive. The authors naturally tend to emphasize the *positive correct diagnoses in the operated cases* namely, the pathological gall bladders found, and to say less about those which are missed, the cases where the Graham test is normal and a

pathological gall bladder is found at operation. In Graham's collection of authors this error was 26% and in the largest series I have seen, namely that reported by Kirklin of the Mayo Clinic before this Society last year, consisting of 500 operated cases using the oral method, this error was 30%. Kirklin frankly called the negative Graham test the least reliable sign and felt that the use of the intravenous method might increase this error. He found normal filling, concentration and emptying in the milder grades of gall bladder disease, in cholesterosis and even with stones if they were free and the wall not involved.

We must also remember that the operated group is highly selected. The test is so valuable and has become so popular that only one case in ten tested comes to operation, in short all our definite statistics come from about 10% of the cases examined. Only about one case in four with a *positive* test now comes to operation. These are not criticisms of the test but merely statements of facts.

It is probably also a fact that the operated cases are usually the most serious ones, the stone cases, those with an obstructed cystic duct or marked infection of the gall bladder, those where the clinical evidence is most definite and where the test might be expected to show best.

There is some limitation in the use of the test in jaundiced cases where there is almost always lowered liver function and where lack of the gall bladder shadow may mean lack of excretion of the dye and not gall bladder disease. We find no enthusiasm in the X-ray department of the Boston City Hospital for the examination of jaundiced patients by the Graham Test.

There are two deceptive groups of cases (1) the asthenic, migraine, constipation, ptosis, low secretion group with poor tone in the gastro-intestinal tract where poor filling of the gall bladder may be due to lack of a tight common duct sphincter and poor emptying to poor tone of the gall bladder, (2) the hyperacidity—duodenal ulcer group has shown a considerable per cent. of error perhaps because the dye has been rendered less soluble by the gastric acidity. This error will probably disappear with improved technique.

There are various unsettled questions; what to do with the cases with an absent gall bladder shadow and few symptoms, or the cases with a normal gall bladder shadow and suspicious symptoms. They are suspects and we must follow them carefully. The pathological gall bladder is a serious disease, there is no hurry, we must reexamine and get our diagnosis right, especially when there is a difference between the history and the tests.

When all is said the Graham test has marked a tremendous step forward in gall bladder diagnosis and has also proved equally valuable in the study of its physiology.

TREATMENT

Medical treatment has lagged behind diagnosis and it is well to recognize its present limitations. There is a wide gap between the ideal and the actual medical treatment, between what we wish to do and what we are actually able to accomplish. We wish (1) to combat stasis in the gall bladder and bile passages (2) to reduce cholesterol, and (3) to lessen infection. The actual treatment usually is the use of a bland diet, weight reduction if needed, regular exercise, low cholesterol (restriction of fatty foods) the use of spring waters or mild salines such as Carlsbad salts, sodium phosphate or sodium salicylate, the use of bile salts and the relief of painful attacks.

Let us consider the matter more in detail. First with regard to *biliary stasis*, the cholagogues given affect liver secretion, but have little effect on emptying the gall bladder. The cholecystogram of the full gall bladder is not affected by bile salts, our best cholagogue. Carlsbad and sodium phosphate have the sanction of experience, but they hardly empty the gall bladder at all and Whipple, Pfaff and others have shown that they have little or no effect as cholagogues. We may conclude that the benefits of a stay at Carlsbad are largely due to the vacation, the hygiene, the daily walk, the outdoor life and the weight reduction, and are not duplicated by taking the salts at home.

Whitaker suggests that the best diet for emptying the gall bladder is one rich in fats with meals at long intervals when the patient is hungry and the tone of the digestive tract high. The digestive organs attack the meal vigorously, the gall bladder empties promptly and rapidly refills and we get two or three good flushings of the gall bladder each day and little precipitation of biliary solids. This diet is difficult to combine with weight reduction.

Lyon's biliary drainage has now been used for about ten years. Dye tests show that the direct application of magnesium sulphate clearly relaxes the duct sphincter or the duodenal wall, but gives only partial emptying of the gall bladder. Complete emptying is obtained only after food. This suggests that biliary drainage with magnesium sulphate has a limited use in local treatment of the gall bladder. We must remember also that the infection in chronic cases is chiefly in the wall of the gall bladder not in the bile. When it was found that fats emptied the gall bladder much better than magnesium sulphate, Lyon and others began to use oleic acid by the tube. It is not easy to see why fats put in through the duodenal tube should act better than a fat meal. Meals have the advantage that they are taken three times a day or more, while tube drainage is usually done only once or twice a week for an hour or two.

On the other hand our past experience has shown that some cases not doing well on other treatment have apparently cleared up promptly and completely with biliary drainage. We have

tried it in cases where surgery was not clearly indicated, in mild or moderate grade cases without stones or typical pain, in young people, in cases with normal gall bladder function, in poor risks or elderly persons. We have often obtained a definite good result, whether psychic or due to liver drainage or to some gall bladder drainage I do not know. McClure's work suggests that biliary drainage affects the liver (hepatitis) more than the gall bladder and that clinical improvement after its use is due to restoration of normal liver function. The results of drainage alone are difficult to judge as some other treatment is always used. In Lyon's book on biliary drainage there are twenty pages of associated treatment (hygiene, diet, drugs, focal infections, etc.)

Biliary drainage of the gall bladder with our present knowledge seems somewhat illogical and we have used it less and less, and only in the type of cases just mentioned and in infectious hepatitis (catarrhal jaundice) of long duration and in some cases of salvarsan hepatitis. Mild cases of catarrhal jaundice are self limited in course and may be let alone. We have used biliary drainage in several cases of salvarsan hepatitis each year but do not believe that it helps much.

Reducing Cholesterol

McMaster has shown that when a diet rich in cholesterol is given the amount of the substance in the bile greatly increases and its concentration per c.c. of bile is almost always greater. The cholesterol is reduced at once by partly excluding fats and lipoids from the diet; fasting also cuts down the cholesterol of the bile but the concentration of the substance per c.c. is greatly increased. This agrees well with the weight reduction of obese patients. In the past before so much was known about cholesterol metabolism we have repeatedly seen an excellent clinical result in early obese gall bladder cases by reducing twenty pounds or more of weight. This conflicts with fat feeding in order to empty the gall bladder, but personally we have preferred to limit the fats in obese cases.

The foods rich in cholesterol are ordinary animal and vegetable fats such as the fat of meat, lard, oils, butter, cream, egg yolk, fat fish such as mackerel or salmon, nuts, olives, calves brains, etc.

The animal on an abundant diet puts out not only more bile but much more cholesterol. The relation between bile quantity and cholesterol yield is not at all fixed however. It is to be hoped that the new knowledge of cholesterol metabolism may be a help in preventing the formation of gall stones.

Wilensky and Rothschild found that disturbance of cholesterol metabolism was an important or chief cause of recurrent symptoms after gall bladder operation in 64% of a series of cases studied, and that in two thirds of these cases the symptoms and the increase of cholesterol in the blood was quite easily controlled by diet.

Reducing Infection

We know the affinity of the streptococcus for the gall bladder and recognize the importance of removing infection in the tonsils, sinuses, teeth, appendix, etc. There seems to be no way known at present to sterilize the contents of the gall bladder by the use of drugs. Mercurochrome is excreted in the bile but loses its sterilizing power in passing through the liver.

Preoperative Treatment

In jaundiced cases the intravenous use of calcium chloride for several days before operation has proved very important indeed in reducing the dangers of hemorrhage.

The selection of cases for medical treatment

We always advise the stone cases with definite symptoms to see a surgeon, for the results of operation are excellent. 94% were cured in a late follow up series reported at the Massachusetts General Hospital a year ago. If the symptoms are mild, the patients do not always go to a surgeon, which may not be ideal, but is very human. What happens then? In ten years of X-ray work we have collected quite a little group of such cases which have been followed from three to ten years and have found that very little has happened, which is not surprising when we remember that quite a large per cent. of the population carry stones till death with little or no discomfort. The mere presence of gall stones is not an indication for operation; many silent stones show a gall bladder wall that is bacteriologically negative, cholesterin stones especially lie dormant for years. Surgery should be based on symptoms, not on the mere presence of stones or low grade infection. I believe that most of such patients escape perceptible injury to other organs.

In the chronic gall bladder without stones and with mild symptoms the indications for operation are less definite and the results less good. Quite a large per cent. remain uncured especially if the symptoms are vague, and pain not prominent. It certainly appears that the more definite the symptoms the better the surgical result.

It seems a paradox that the results of operation for gall stones which are usually considered a late stage of gall bladder pathology are so good while the results of operation on chronic cholecystitis of a milder, earlier grade without colics are not nearly so good, in fact often rather disappointing. Some of the latter group are probably better off under medical care, especially if obese or elderly or showing a normal Graham test.

The slightly diseased gall bladder has probably been too often removed much as the "chronic appendix" was in the past. The justification for operation lies not so much in mild or moderate degrees of inflammatory change found in the gall bladder by the pathologist, as in the pain or distress of the patient before operation. From the pathological standpoint the

majority of adults have some infection of the gall bladder, but if it is functioning normally it is probably not causing symptoms and it is better to let it alone and look carefully elsewhere to see if symptoms are not due to disease of other organs such as the colon, appendix, ulcer of the stomach or duodenum, hepatitis, etc.

The results of medical treatment are often satisfactory. Exact figures are impossible on account of some difficulty in diagnosis, but my impression is that a third to a half of the milder cases get well and stay well.

Fortunately we can leave to the surgeon the decision whether or not to remove the gall bladder on the history and laboratory tests when it looks and feels normal at operation. This question will be finally decided only by following the patients for a long time to see the end results of operation.

The medical man has several duties in gall bladder cases:

1. To make as good a diagnosis as possible.
2. To send to a surgeon the gall stone cases who have symptoms.
3. To give medical treatment to some of the mild or early or uncomplicated or poor risk cases of cholecystitis.
4. To avoid putting off a necessary operation.

REFERENCES

Aschoff, L.: Lectures on Pathology. Paul B. Hoeber, N. Y., 1924.
Carlson, A. J.: Jour. Am. Med. Assn., 1925, 85, 1468.
Counseller, V. S., and McIndoe, A. H.: Surg., Gynec., Obst., 1926, 43, 729.
Davis, D.: Am. Jour. Med. Sc., 1926, 172, 848.
Graham, Cole, Copher and Moore: Disease of the Gall Bladder and Bile Ducts. Phila., Lea & Febiger, 1928.
*Greene, C. H.: Jour. A. M. A., 1925, 85, 1476.
Ivy, A. C., and Oldberg, E.: Jour. A. M. A., 1928, 90, 445.
Kirklin, B. R.: Bost. Med. and Surg. Jour., 1928, 197, 1487.
Lyon, B. B. V.: Non Surgical Drainage of the Gall Tract. Lea & Febiger, Phila., 1923.
McClure, C. W., and Vance, E.: Bost. Med. and Surg. J., 1924, 191, 767.
McClure, C. W., Huntsinger, M. E., and Gottleib, J.: Bost. Med. and Surg. J., 1925, 193, 1054.
McMaster, P. D.: Jour. Exper. Med., 1924, 40, 25.
McMaster, P. D., and Rous, P.: Proc. Nat. Acad. Sci., 1923, 9, 19.
McNee, J. W.: Brit. Med. Jour., 1924, 2, 495.
Meltzer, S. J.: Am. Jour. Med. Sc., 1917, 153, 469.
Menzer, S. H.: Surg., Gynec., Obst., 1926, 42, 782.
Pfaff, F., and Balch, A. W.: Jour. Exper. Med., 1897, 2, 49.
Weber, P. F.: Trans. Path. Soc. London, 1903, 54, 103.
Whipple, G. H.: Physiol. Rev., 1922, 2, 440.
*Whitaker, L. R.: Jour. A. M. A., 1927, 88, 1542.
Wilinsky, A. O., and Rothschild, M. H.: Am. Jour. Med. Sc., 1924, 168, 66.

*This article contains references to many other papers by the author and his co-workers.

Discussion

Chairman Sweet: Unfortunately, Dr. Porter, who was to have opened the discussion, is unable to be here. Dr. Graham, will you come forward and open the discussion for us? Dr. Evarts Graham of St. Louis! (Applause.)

Dr. Evarts A. Graham, St. Louis: *Mr. Chairman and Members of the Massachusetts Medical Society*—I feel that it is rather an imposition for me to take part in this discussion this morning because I am scheduled to talk tonight at some length on some of the points which have been raised this morning and I don't want to overburden you with too much talk from me. However, there are one or two points which I would like to speak of which perhaps I will not have an opportunity to discuss with you tonight in quite the way that I should like to present them.

I am greatly interested in all of the discussion which I have heard this morning about the question of cholecystography. Naturally that has interested me very much. I feel entirely in sympathy with all of those who have stated that cholecystography is of course not an absolute test of whether or not a patient should have his gall-bladder removed. No laboratory procedure will supplant ordinary common sense.

With that statement before us I think that we can perhaps discuss the value and limitations of cholecystography a little more intelligently. Cholecystography is a functional test of the gall-bladder. It is concerned with the two functions of the gall-bladder that we have positive knowledge of, the first of which is filling and emptying, and the second of which is concentration. We really haven't any positive knowledge about any other function of the gall-bladder, although it is probable that there are some functions that we don't know anything about yet, but cholecystography at least is the test of those two functions that we know with certainty.

The question that always comes up, of course, is whether an organ whose functions are disturbed is producing the symptoms of which this particular patient complains. The point also comes up in addition as to whether the symptoms of which this patient complains are partly due to his gall-bladder or solely due to the gall-bladder.

I cannot help feeling that much of the criticism placed against cholecystography as a diagnostic test of cholecystitis is due to a failure to take into consideration the statement which I have just made. It is perfectly possible that a gall-bladder may show anatomical evidence of disease and yet not have markedly disturbed function. I should say perhaps instead of anatomical evidence of disease, anatomical evidence of abnormality. We have many parallels to that. I shall speak more at length about that this evening but I might stop to mention one or two.

In an old healed fracture, for example, we have definite anatomical evidence of abnormality. If a patient with an old healed fracture has a pain in his leg sometime after he has had normal use of that leg and normal function, we do not immediately incriminate the anatomical evidence of abnormality as giving rise to the pain in his leg, but we search for other possibilities of pain and we very often find that the anatomical evidence of disease or of abnormality which that man shows in his healed fracture is not producing symptoms at all.

I feel that the same thing happens in the case of the gall-bladder: that anatomical evidence of abnormality is not by any means conclusive of whether or not that gall-bladder is producing symptoms, and whether or not it can be expected that the removal of such a gall-bladder will necessarily relieve the patient of his symptoms.

The other side of the picture I cannot discuss so briefly and I would prefer to leave that for a more extensive discussion tonight, namely, whether or not a gall-bladder which shows disturbance of function can be capable of producing symptoms although it may not show any gross anatomical evidence of abnormality. As I say, I cannot discuss this briefly and I would prefer therefore to discuss that feature of it tonight.

Dr. Judd has mentioned at great length the subject of hepatitis in connection with biliary tract disease. One point which I am sure that Dr. Judd feels rather strongly on, because I have had numerous talks with him about that subject and which he discussed only lightly, I should like to extend a little more fully for a moment. He mentioned the fact that hepatitis probably always occurs with cholecystitis. He mentioned the possibility of a residual hepatitis accounting perhaps for some unsatisfactory results after operation for biliary tract disease. One point which he did not mention, which I should like to emphasize strongly, is the fact that very often the symptoms of what we think of as gall-bladder disease are really symptoms of hepatitis. If you don't believe that, the next time you see a patient in an attack of acute cholecystitis just palpate the edge of the liver and you will be surprised to find that very often the entire liver edge is tender even clear around on the left lobe. We have noted that repeatedly.

If a patient has a hepatitis and if a patient happens to have a gall-bladder which shows some pathological evidence of abnormality, that does not by any means indicate that the symptoms of hepatitis are necessarily due to the diseased gall-bladder. Any lesion of the portal system—the appendix, the stomach, the duodenum, and even the small intestine beyond the duodenum—may give rise to hepatitis. If, therefore, we have made a diagnosis of cholecystitis in a patient and if we have found an evidence of an abnormal gall-bladder at operation, we should not by any means have any particular right to expect that our patient is going to be relieved of his symptoms unless we are quite sure that other sources of hepatitis have been excluded.

There is one other point which I wish to speak of and then I shall finish. That concerns the point which Dr. White has spoken of, particularly with reference to stasis in relation to the origin of gall-bladder disease. This is also a point on which I am going to speak more extensively tonight but I wish to mention only one feature about it here, and that is this: The type of patient who has the most marked stasis is not the type of patient who most frequently has gall-bladder disease. The type of patient who has the most marked stasis is the thin, asthenic, visceroptotic type of individual. The type of patient who has gall-bladder disease most prominently is the type of patient who is the hypersthenic or the sthenic individual who is fat, as you know, and whose gall-bladder is situated high. Surgeons know, of course, that in the majority of cases of operation for gall-bladder disease, the gall-bladder is situated high. Certainly in the majority of patients who have the most severe type of biliary disease we find the gall-bladder is situated high, a location which is not conducive to stasis in the ordinary sense. Conversely, the patient with visceroptosis, who has the long gall-bladder, often situated even as low down as in the pelvis and who we know has stasis because we can demonstrate it cholecystographically, is the type of patient who does not have gall-bladder disease so often as other types. (Applause.)

Dr. Michael F. Fallon, Worcester: *Mr. Chairman, Fellows of the Section*—I am sure I voice the sentiments of all the members here present when I say that we are deeply indebted to Dr. Lahey for his clear résumé of the subject of the surgery of the bile-ducts, and I know we have all profited by it. The Doctor has stressed the presence of stones in the ducts and has shown his methods of revealing the presence of those stones more frequently than he has in former years, and that shows the thoroughness of his work on the biliary tract. I don't think he intends that we should explore the ducts in all cases of gall-stone disease, but in the cases where he has done it he has at times found stones in the ampulla. Personally, I not infrequently find the introduction of a sound or a probe in the duct very unsatisfactory. It is somewhat like the use of a sound or a probe in the manner in which we used to use it formerly in fistula in ano and yet at times the sound is indispensable. The mucosa frequently is swollen, edematous and more especially near the duct and ampulla. However, the manner in which the Doctor has discovered the stones, especially in the terminal portion of the duct and ampulla lately has been a lesson to all of us. The anomalies and distortion of the anatomical structures in the neighborhood of the gall-bladder gives confusion frequently to all surgeons and it is interesting to know that the very first operation on the hepatic duct was done by Kocher unknowingly and unintentionally. The hepatic duct was so closely and intimately attached to the gall-bladder that he incised it without knowing it, and the patient eventually died from the presence and results of bile in the peritoneal cavity.

As to the anatomical anomalies, I think one who has had experience in gall-bladder surgery

will come to the conclusion that the anatomical anomalies of the biliary tract are very frequent.

As Dr. Lahey said, it is so easy particularly to injure the accessory hepatic duct. Within one week we have injured the hepatic duct in taking out a not very difficult gall-bladder. Fortunately, we discovered it in time and repaired it.

I think the cystic duct is the great landmark in the surgery of the biliary system, and having unfolded that and using that as a guide, perhaps it isn't always so difficult to find the other structures, but even yesterday in taking out a gall-bladder we incised what we thought was the cystic duct. I was assisted by Dr. Lynch, (and without him I could not do the number of gall-bladders that I do). We incised the cystic duct, and he agreed with me that it was the cystic duct. It was not the cystic duct but what it was, I am not sure. Possibly it was a thickening of the cystico-duodenal ligament, the outer edge of it. The anomalies, it seems to me, are more frequent than the anatomies have given credit.

One thing more I wish to speak of is the matter of implanting and anastomosing the external fistulae into the duodenum. I think that Dr. Lahey is to be congratulated on the remarkable skill that he has displayed in getting the results that he has gotten in this operation in the anastomosis of the external biliary fistula into the duodenal wall. It is interesting to know that the first man who attempted that operation, von Steubenrauch, over twenty years ago, succeeded at first in the operation, and then the sinus tract necrosed and it was a failure, and later by a reconstructive operation he succeeded. Murphy tried the same operation by implanting the external biliary fistula into the end of the common-duct, and while jaundice ceased for some months, the patient again became jaundiced and eventually died, and I think when such pioneers and such able men have failed in that operation, that the inexperienced should go slowly on it. That is not detracting from nor contradicting at all what Dr. Lahey said. Rather Dr. Lahey's success is more to his credit. I know and I have seen published the results that he has had in that operation, and they have been remarkable, but many surgeons doing gall-bladder surgery should attempt it with diffidence and be very careful. The operation perhaps that may be done—and not always successfully—is the one advocated first, I think, by William Mayo in 1905; that is, the implanting of either a part of the common or hepatic duct into the duodenal wall. Even if there is only a vestige of the duct perhaps it would be advisable to try that. (Applause.)

Dr. P. E. Truesdale, Fall River: Our problem in connection with surgery of the gall-bladder is not so much to know how to operate, but when to operate. It is obvious that Dr. Erdmann's success has been due largely to the simplicity of his measures employed, also to the expeditious manner in which his operations have been carried out. In addition it seems to me that one needs to be equipped with a good history, backed up by the medical examination and the laboratory determinations to know what to do in border-line cases; when to drain the gall-bladder, when to incise the common-duct, and when one should search for the characteristic signs of pancreatitis with fat necrosis.

Dr. Erdmann has come very near outlawing cholecystostomy in favor of cholecystectomy. While it is true that most surgeons today practice the operation of cholecystectomy, yet there is danger that the pendulum may swing too far in excluding cholecystostomy. It has a place and it should be used for purposes of safety. Many patients who enter the hospital for immediate operation for infection of the gall-bladder are well along in years; they have fibrillating hearts; their non-protein nitrogen determinations are high, and their resistance low. To do a cholecystectomy under adverse conditions such as these, is to invite disaster. Among the aged and patients with cardiac disease we have made it a practice not only to do cholecystostomy in such cases and to make the operation as short as possible, but also to exercise care in the selection of the anesthetic, using local anesthesia when possible or combining local anesthesia with a general anesthetic, ethylene by choice; in every case we use an oblique incision along the costal border instead of a vertical incision through the right rectus muscle. I am perfectly satisfied that we have had patients survive operation who would have died if we had done cholecystectomy.

Our problem, too, is beset with the dilemma of conjecturing when to operate upon the so-called chronic gall-bladder. In that connection my special plea would be in every case to give the patient the same consideration and the same study that is given to the gall-bladder. (Applause.)

Chairman Sweet: Unfortunately Dr. Mixter is not here, so I will ask Dr. Lord to discuss.

Dr. Frederick T. Lord, Boston: Regarding the diagnosis of gall bladder disturbances, it seems to me that chief reliance must be placed on the history and that for the most part errors in diagnosis are to be attributed to failure to recognize the extreme importance of the patient's story. It is needless for me to go into detail regarding this matter, but I may say that special inquiry should be made regarding the sequence and grouping of symptoms and that pain when it occurs should be adequately characterized. The history is likely to be of greater diagnostic importance than the physical examination and the results of special tests. Of special tests, the icterus index is at times of value in gall bladder disease with associated cholangitis. Latent jaundice not otherwise to be deter-

mined may be indicated by an index between 5 and 15. Duodenal drainage as a diagnostic measure is seldom of special value except for the determination of complete closure of the common duct.

The Graham test of gall bladder function is to be regarded as the most important advance which has been made in the diagnosis of gall bladder disturbances since the advent of the X-ray in its application to medicine and surgery. To estimate its merits I have correlated the results in the routine oral use of the test with the operative findings in 100 cases at the Massachusetts General Hospital. Gall stones were found at operation in 61 cases and in this group there was evidence of abnormal gall bladder function in 55 (90.1 per cent.) and normal gall bladder in 6 (9.8 per cent.). Gall stones were demonstrated by the test in 18 (29.5 per cent.) including 3 of the cases with normal function and thus abnormal function or gall stones were demonstrated by the test in 58 (95 per cent.) of the 61 cases. Cholecystitis without stones was demonstrated at operation in 18 and in this group abnormal gall bladder function was found in 15 (83.3 per cent.) and normal gall bladder function in 3 (16.6 per cent.)

In this group of 79 patients with gall bladder pathology, an abnormal function test in 70 and a normal function test in 9 would seem without further explanation to indicate that the test might be regarded as reliable in the demonstration of gall bladder pathology in 88.4 per cent. of the cases. But it should be pointed out that certain factors complicate the problem and that reliance on a normal function test as an indication of the absence of gall bladder pathology tends to deter the surgeon from recommending operation on patients with normal gall bladder function and thus to exclude a certain number of such patients from the operated group. Complete reliance on a normal gall bladder function test in the decision not to operate would have excluded the 9 patients with normal function from operation in this series and the percentage of correctness for the test in the remaining 70 cases would have been 100 per cent. The occurrence of normal function in the presence of gall bladder pathology must be regarded as a limitation of the diagnostic value of the test.

In this group of 100 operated cases there are 21 in which the gall bladder was found normal by the surgeon. As the gall bladder was not removed its normal character cannot be regarded as established beyond question. In 11 of these 21 cases or 52.3 per cent. the Graham test showed abnormal function and operation showed duodenal ulcer without perforation in three, malignant disease of the pancreas in 2, acute or sub-acute appendicitis in 2 and primary carcinoma of the liver, salpingitis, abdominal adhesions and an appendix which on removal was reported normal by the pathologist in 1 each. The inference may be drawn that intra-abdominal pathology elsewhere than in the gall bladder is capable of disturbing the normal activity of the gall bladder and that such modification of the function of the normal viscus limits the diagnostic value of the procedure.

In conclusion, I may say regarding the Graham test that it is of great diagnostic value, but whether positive or negative cannot alone be relied upon to indicate the presence or absence of gall bladder pathology.

Mr. Chairman, as I have called attention to certain limitations of cholecystography, I should appreciate it very much if Dr. Graham could again be given the privileges of the floor.

CHAIRMAN SWEET: Dr. Graham, you have the floor.

DR. EVARTS A. GRAHAM (St. Louis): *Mr. Chairman*, I feel that I have already taken up too much time. I am going to discuss some of these features tonight, and unless you feel that it is highly desirable, I think I have already spoken a sufficient length of time.

CHAIRMAN SWEET: Under the circumstances, we will excuse you.

Now we hope there will be very general discussion.

GENERAL DISCUSSION

DR. E. L. YOUNG, Boston: *Mr. Chairman*, I think in the face of this brilliant series of papers it is hard to add anything new, but I want to give a few figures that I got in checking up some of the cases at the Massachusetts General Hospital. I thought it might be possible in correlating the autopsy findings, the operative findings and the clinical history to find out why there was such a large proportion of stones left behind in the common-duct. I might say to start with that what I found doesn't help very much but the figures, I think, are of considerable interest.

In 20 years there were 67 cases autopsied where there had been an operation on the biliary tract. Of those 67 cases, 42 had stones at operation and 25, or 59 per cent. of the stone cases showed stones at autopsy. Of the 25 cases that did not show stones at operation, there were only 2 cases that showed stones at autopsy. There were no factors that seemed to be of great help in directing further search for stones. Seventeen of the cases where stones were found at operation and at autopsy had no jaundice. A normal common-duct was reported at operation in 4 or 5 cases, and yet stones were present at postmortem. There certainly are not 59 per cent. of our cases where we take stones out of the biliary tract, where they come back with recurrent symptoms. There must be a loophole somewhere, in spite of the fact that autopsy cases undoubtedly are the worst type, and either because of weakness or because of an acute condition have an operation not as complete as we would like, and it

seems to me the answer is in the fact that where stones have been taken out in the majority of cases the stones left behind were the small stones and drainage of the biliary tract either through the dilated sphincter of Oddi or through a drainage tube got rid of all of the remaining stones. That is not true of all of the cases, of course, because some of the stones were marked 2 c. in diameter, which is a large stone. I wonder whether too prolonged a search with too much damage done to the common-duct might not be a bad thing in the face of the possibility of the removal of the small stones by the drainage mentioned.

Finally, just one phrase which I would like to give Dr. White who questioned the reason why the worse the symptoms, the better the result was apt to be. I want to give him the ringside phrase, "the bigger they are, the harder they fall." (Laughter and applause.)

Dr. Fred Bates Lund, Boston: This has been an excellent symposium on a subject of the greatest interest. I want to endorse what Dr. Truesdale said about not agreeing with Dr. Erdmann in limiting the indications for cholecystostomy to obstruction of the common duct. We get a great many patients with fibrillating hearts, arteriosclerosis, obesity, and deep chests, who have to be prepared by medical treatment for two or three weeks before we dare to touch them at all. Then when we find (as I have just done in the case of a man who had been hiccoughing for three weeks) a contracted gall-bladder which won't come anywhere near the surface because it has shrunk way down underneath the liver, it is comparatively easy to remove the stones and tie in a tube, while it would not have been possible to remove the gall bladder and have the patient live. He just barely did live as it was.

Dr. Erdmann rightly called attention to the fact that convalescence is better after cholecystectomy. That is especially true in young people where you can get at the thing easily. In old people where you cannot get the liver outside as he has done in these beautiful pictures, it is not anything like as easy, and in spite of the modern refinements of technique, adequate exposure, local, general and spinal anesthesia, there are a good many cases where you had better do drainage. They get well that way anyway. I have three or four patients on whom I have done drainage and removal of gall-stones twice, and if they come again I don't think I will take the gall-bladder out. They have come at intervals of ten years and I think they will die of something else before they will come a third time. (Laughter.) They have been surprisingly well in the interval.

I like Dr. Erdmann's technique, but in every gall-bladder case I always put in the small drain through a stab wound and sew up the main incision. This allows the incision to be carefully closed. There is much less danger of hernia and the drain runs away from instead of across the duodenum. A drain is always used because in the case where one least expects it there may be an escape of bile.

I think Dr. Lahey's discussion of the ducts leaves very little to be added to it, but I do think he rather discouraged us about operating on painless jaundice when the gall-bladder was not distended according to Courvoisier's law. I have several times found at exploratory operation in painless jaundice that there was a stone in the common duct. Those cases of course were saved by exploration. Another thing I found in a case of painless jaundice was distended lymph glands along the common-duct. I used to remove stones from the common-duct after other people had removed the gall-bladder with great pride. Since, after careful exploration in two cases, both of which were important ones, I had to reoperate and open the common-duct, I haven't been quite so conceited about it.

As Dr. Lahey rightly said, a stone in the common duct doesn't always produce the symptoms of pain and slight jaundice, but I don't believe in opening the common-duct when I can feel no stones in it unless it appears abnormal. I liked his pictures of angulation of the common-duct. One may pull on the cystic duct and draw the common duct into a V and tie it off, which is most undesirable.

Dr. Judd spoke about certain very disconcerting symptoms which persist after gall-bladder operations; that is, attacks of pain and sometimes nausea and vomiting. These symptoms as has been said, may persist for a long while after operation and then get well. Of course there may be a little mucus passed or a small stone. I had one case in which these symptoms were relieved and a small stone was found in the stools. In the cases alluded to by Dr. Young I think that there may have been at least in some of them a small stone or two left in the common duct. The dilatation of the common duct which Dr. Judd's corrosions have shown to occur after the removal of the gall bladder, may be the reason for the passage of these stones and the relief of symptoms. Such dilatation undoubtedly takes time.

Lately I have found two cases of suppurative cholecystitis without stones in which there was an abscess above the duodenum not connecting with the pancreas, retroperitoneal and not connected with the gall-bladder. It seems to me that these came from suppuration of the gland which we have all felt close to the cystic duct, or one of the nearby lymphatic glands, and that that was the cause of abscess alongside of the cystic duct. I submit that as something I had not before observed. To Dr. White's enumeration of the main functions of the medical man in cholecystitis, I want to add one other function, and that is to get debilitated, fat, old people with bad hearts in condition for the surgeon to operate upon them safely. In these cases I have found the medical man's help of the very great-

est value. I don't care so much about the diagnosis if we can only cure the patient. (Applause.)

Closing Discussion

Dr. John F. Erdmann: It has been a very great pleasure to have listened to the various arguments for and the arguments against.

In regard to Dr. Judd's cutting of the suspension ligament, I have done it many a time, and I never felt that the suspension ligaments were worth anything, but I have always felt that some of these chronic bellyachers (if they knew their suspension ligament had been cut) would come back with chronic ptosis of the navel. (Laughter.)

As Dr. Truesdale and Dr. Lund have both called attention to my limiting cholecystostomy to so small a field, there were certain portions of my paper which I evidently read too fast for you to catch in which there was a proportion of cases on which cholecystostomy was done. In New England there seem to be a lot of cases of gall-bladder disease with fibrillation but down in New York we don't have so many of the gall-bladder disease patients with fibrillation. The majority of them in New York are middle aged Polish and Russians. We do occasionally get the aged patient and then we are careful to train that patient up to the point where he or she is an operative patient who will show a favorable result.

All of us know that the hepatic tributaries of the biliary system every now and then are involved with a very marked amount of stones. They can even be seen in the surface of the liver itself, as you expose the patient's abdominal contents.

I have a very vivid recollection at the present time of operating on a woman 77 years of age, eight or nine years ago, who had been operated on by various operators four times before, from whom I removed three stones from the common-duct which were so large that it would have been impossible for any man to have overlooked them. At another time she was operated on by another New York surgeon, and twice by a man in Brooklyn, and these three stones which I extracted a year and a half after the 4th operation were larger than a Concord grape.

Dr. Edward Starr Judd: I believe that one of the most important problems in gallbladder work just now is the one I have presented, I am afraid, in a very superficial way, that is hepatitis, as referred to by Dr. Graham. I am very frank to say that I don't understand it. My interest in this phase of the subject was created by Dr. Graham's first paper on "Hepatitis: A Complement of Cholecystitis." I have pointed out that I had operated several times in which our clinicians and surgeons had made a diagnosis of cholecystitis, but at the time of the operation the only evidence of a lesion I could find was a very definite hepatitis. In other words, I have operated in eight or ten such cases for a condition which I have called primary hepatitis. I have taken out gallbladders, and Dr. Graham is largely responsible for this because he has interested all of us in the possibility of a gallbladder being diseased and the surgeon not being able to interpret the disease. From a year to eighteen months has elapsed since the operation in these cases. I hope to be able to investigate the series to see whether removal of the gallbladder has had any effect on the symptoms in cases in which the gallbladder did not show much if any gross evidence of disease except possibly some enlargement of the regional lymphatics; the primary lesion appeared to be in the liver itself.

I fully agree with Dr. Graham that hepatitis can produce symptoms that closely resemble cholecystitis.

Dr. Daniel F. Jones: In regard to Dr. Erdmann's paper, I would like to say that while cholecystostomy may give a higher mortality, it is not because it is a more serious operation, but because it is used at present only in the seriously ill patients. If it went out that the mortality was higher in cholecystostomy than in cholecystectomy, without any explanation, one would be led to do a cholecystectomy in the seriously ill cases which should have a cholecystostomy. In the same class of cases, cholecystostomy must have a lower mortality than cholecystectomy.

In regard to the T-tube which Dr. Lahey leaves in the common-duct for two months after a repair, it occurs to me that the rubber tube might prevent the line of sutures from healing on the inside for that length of time, which would tend to cause a stricture rather than prevent it. Rubber tubing in contact with a raw surface will prevent healing for a long period.

In regard to the dangers of gall bladder surgery, I suppose everybody meant to say that the common-duct should always be exposed before the cystic duct is tied off, but that was not made clear. I used to tie off the cystic duct, after carefully exposing it, until I mistook the common-duct for the cystic duct, and tied it off on one occasion. Since then I have exposed both ducts.

As to hepatitis, it is interesting to note that Dr. R. H. Fritz a great many years ago talked much about hepatitis. This stimulated Dr. M. H. Richardson to look for it in all abdominal operations. It was found in an astonishingly large number of cases and it seemed to me to be present as often when no cause could be found, as it was in gall bladder disease. I am very glad to know that Dr. Judd and Dr. Graham feel that hepatitis causes definite symptoms; I had never associated symptoms with the condition, but shall be on the lookout for them.

CHAIRMAN SWEET: Dr. Young, will you answer Dr. Erdmann's question?

DR. E. L. YOUNG, Boston: All of these cases died in the hospital either directly or indirectly as a result of the operation. There was one case in which the pathologist described very minutely the formation of the concretion around the suture. That patient died some two weeks afterwards of pneumonia, and there was one case where it was the fourth operation, the primary operation having been a cholecystectomy where it seemed as though there was secondary formation in the ducts, but other than that all of these were primary gall bladder operations.

DR. FRANK H. LAHEY: In answer to the question of silent common-duct stones, I don't believe that one sees silent common-duct stones with progressive, persistent jaundice and with clay-colored stools over a long period of time. One does see that with a malignancy, but the number of cases in which there is not a palpable gall bladder, and in which there is no bile in the stools which will be benefited by exploration will be very small. The cases that definitely have a palpable, dilated gallbladder, plus clay-colored stools, plus a painless and persistent progressive jaundice, will be very close to one hundred per cent. of malignancy at the head of the pancreas or the common duct below the cystic duct. We always have the stools as a helpful diagnostic feature in the cases due to obstruction from stone and from malignancy in separating the cases of painless and progressive jaundice.

Dr. Fallon spoke of Drs. Murphy, von Stubenrauch and McArthur who transplanted fistulae. They transplanted the fistulae into the cut end of the common-duct, but they failed because the fistulae must be mobilized and transplanted as a whole, while the transplanting of the fistulae by bringing the jejunum or stomach up to the end of the fistulae without separating it from its nourishing bed in the liver means that only that part in the fistula in the abdominal wall needs to be mobilized so that there is practically no completely dissected portion of the fistulous tract which is to be implanted. One-half of the circumference of the fistulous tract is thus undisturbed and in contact with the liver, and therefore well nourished with a rich blood supply. If one attempts to transplant the fistulous tract into the common-duct there must be a considerable distance of fistulous tract which is completely free throughout its circumference and unnourished, and that is why these cases of ours, I think, succeeded and the others failed. The procedure is not difficult nor highly technical.

We cannot, I believe, separate the question of cholesterol metabolic disarrangement from gall-stones. This does not relate to the debated point of chronic cholecystitis but does relate, I think, to the whole question of gall-stones. We can construct the best picture of gall-stones today if we start with the metabolic errors in cholesterol metabolism. We know that we frequently see these cases of typical cholesterol stones that have existed probably without infection for a long period of time, and superimposed upon those we see the black rings of calcium bilirubin which, just as bladder stones show the repeated attacks of cystitis, show the repeated attacks of cholecystitis. When the calcium bilirubin stone is superimposed upon the cholesterol stone then we have inflammation but previous to that, as was first described by Aschoff, the original pure cholesterol stone produces its effect mechanically and when it interferes with the function of the gall bladder, as, for example, in blocking its outlet, then we may have infections and the superimposed inflammatory processes.

One of the things which is interesting in this common-duct survey, as has been brought out by Dr. Gattell in going over our series, is that the operative mortality of these common-duct cases is ten per cent.; that is, if you take all of the deaths within one month of the time they were operated upon, the operative mortality is ten per cent., but if you take this same group in the next ten years there is another ten per cent. added. So that at the end of ten years in these cases the mortality is twenty per cent. Therefore, these gall bladder cases should not be permitted to go on for long periods of time because the common-duct stones with their associated high mortalities are the result of long-standing gall-bladder infections and untreated gall-stones. (Applause.)

CHAIRMAN SWEET: I think you will all agree with me that we have been rarely privileged to listen to this remarkable program and I know you will join with me in gratitude to the gentlemen who have made it possible.

Gentlemen, I hereby declare the 1928 session of the Surgical Section of the Massachusetts Medical Society adjourned.

The meeting adjourned at twelve fifty-five o'clock.

The following officers of the Section of Surgery were elected for the ensuing year:

Chairman—P. E. Truesdale, Fall River.

Secretary—L. S. McKittrick, Boston.

THALLIUM ACETATE IN RINGWORM OF THE SCALP*

BY BERNARD APPEL, M.D.†

THE variety of ringworm of the scalp commonly seen in this vicinity is trichophytosis capitis, or, as sometimes called, tinea tonsurans. It is a disease occurring chiefly in childhood and is essentially an infection with a fungus of the hairs and hair follicles of the scalp. The clinical picture may vary considerably, not only in the individual case but with the type of fungus. It may be a scattered, slightly scaly, non-itchy eruption; it may consist of several patches of partial baldness with the stubby hairs irregularly "chewed" or broken off; it may be one large patch of alopecia; or, it may cover the greatest part of the scalp with a thick, heavily crusted, itchy lesion. The diagnosis is usually easily made and as easily corroborated by microscopic examination of the hair stumps.

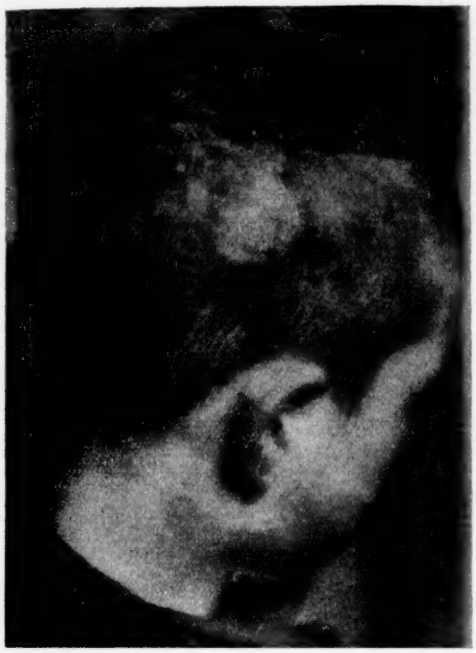

FIG. 1. Case No. 2. Before Thallium Acetate. (Photo by Skin Department.)

Although ringworm of the scalp is relatively harmless, it is of tremendous importance, particularly in children of school age. On account of its great degree of contagiousness, it requires exclusion from school. This is obviously a definite social and economic loss because the usual treatment extends over a very long period of time: from a few months to, sometimes, years.

In the list of therapeutic agents are the well known fungicides: salicylic acid, sulphur, iodine, tar, chrysarobin, sodium thiosulphate, the mercurials, etc. These, used in the ordinary methods and incorporated in the common vehicles, are sometimes effective. Often, however, they are almost useless because they cannot be introduced into the hair follicles. Epilation is, therefore, the most effective single procedure; when combined with fungicides the optimum result is obtained.

Epilation for ringworm is not new. It has been accomplished by various methods: pulling the hairs out, one at a time, with forceps; spreading various kinds of wax and pitch on cloth or leather and pulling the hair out in bunches by applying this plaster and then jerking it off; applying vesicating drugs like iodine or turpentine in strong enough preparations to produce acute inflammation with subsequent alopecia; electrolysis; and, within the past few years, X-ray.

X-ray was at first considered the epilatory par excellence. It is painless, clean, quickly applied, and efficient. But now many roentgenologists will hesitate to attempt epilation. The possibility of producing atrophy or permanent alopecia, either partial or total, is sufficiently menacing to cause this reluctance. It is true that this opinion as to the detrimental effects of X-ray is not shared by all roentgenologists. The accompanying photograph of a young girl epilated several years ago for favus of the scalp gives a good idea, however, of the possibilities of the permanent untoward results of X-ray epilation. (Fig. 4.) There is also the further difficulty of controlling young children on the X-ray table, as well as the not unimportant item of the relatively great expense of X-ray treatment.

The discovery by Buschke of thallium acetate as an epilatory has practically solved the problem. He, in conjunction with his co-workers, has carried out an extensive investigation of the subject. Starting with the simple experiment of giving an arbitrary amount of the drug in the food of laboratory animals to produce alopecia, he gradually and painstakingly worked out the exact therapeutic dosage for humans. As with many other works of research, this one has already led into other very interesting by-paths of speculation. There is already a not inconsiderable bibliography on the subject. The most recent American article is by Felden*, who reports a series of forty-seven cases of ringworm of the scalp epilated by thallium acetate. Of these, thirty-six were successfully treated with the first dose of the drug. In only one case were there toxic symptoms: in a girl approaching puberty.

Thallium is a heavy metal (atomic weight 204.0; specific gravity 11.19; valence I or III) commonly found in pyrites and in the flue dust

*From the Department of Dermatology, Boston City Hospital.
†For record and address of author see "This Week's Issue," page 743.

*Arch. Derm. and Syph., 1928, XVII, 182.

of sulphuric acid works. The acetate is a white, crystalline powder, quite soluble in water. Therapeutically, it was used principally to reduce the night sweats of phthisis and its untoward effect of producing loss of hair was well

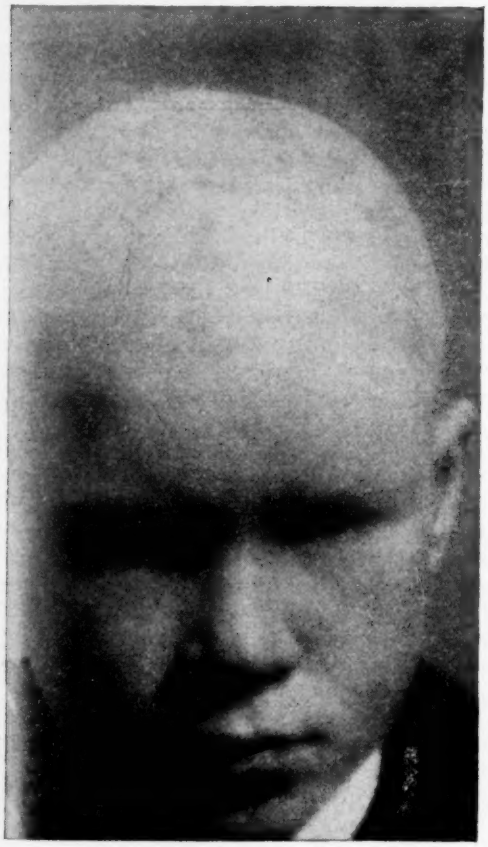

FIG. 2. Case No. 2. Twenty-four days after Thallium given. (Photo by Skin Department.)

known. It remained for Sabouraud to recognize the possibility of using it as an epilatory. This he did, in what we now know to have been an overdose, for he soon discarded it on account of its toxic effects. The mechanism of its action as an epilatory is not known but is thought to be through an effect on the endocrine-sympathetic system. This, at least, may explain the relative freedom from toxic symptoms of children before puberty, when the sympathetic-endocrine system begins to stabilize, as it were.

The technique of administration is very simple. The exact weight of the child is determined. Then the amount of thallium acetate is carefully weighed out, dissolved in about half a glass of sweetened water and given to the child to drink. None of the solution must be left and, if the child is frightened or otherwise refractory, he must be prevented from spilling any. The latter happened in one of the cases here reported with the result that no epilation occurred. Because an interval of at least two months should elapse before the dose is repeated, one should carefully guard against an accident of this sort. The amount of drug used is fairly sharply determined; there is, however, a variance in the actual dose used by the different

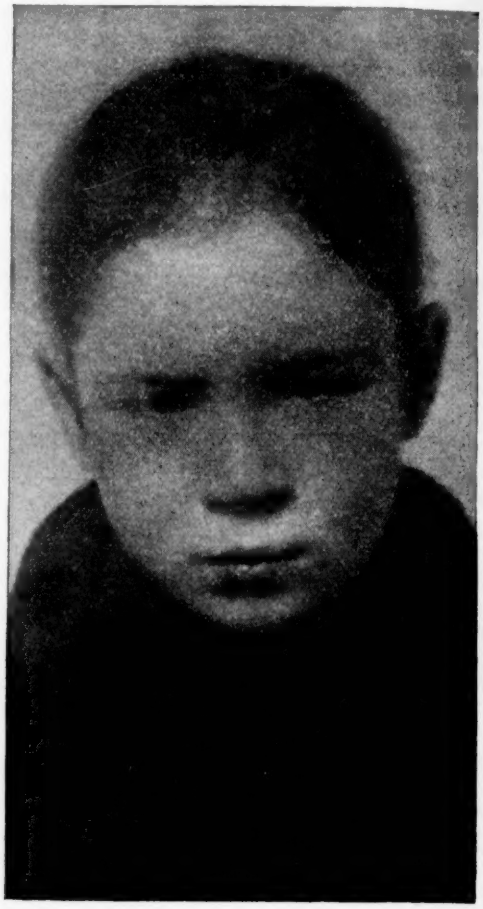

FIG. 3. Case No. 2. Three months after Thallium given. (Photo by Skin Department.)

FIG. 4. Atrophy and Alopecia following X-ray epilation. (Photo by Skin Department.)

men reporting. It varies from 7.0 to 9.0 milligrams per kilogram of bodyweight. The cases here reported received 8.5 milligrams per kilogram.

Hair starts coming out usually in from nine to fourteen days and is totally out in about three weeks. It starts growing in again in from two to four weeks. An interesting fact is that in all these cases a thin line along the frontal edge of the scalp, the eyebrows, and the lashes, were not affected. One explanation is that these areas are innervated by the central nervous system, rather than by the sympathetic, as is the rest of the scalp.

It is necessary to continue fairly active local fungicidal treatment during the entire period. These cases received an ointment consisting of salicylic acid one-half dram, precipitated sulphur one dram, and petrolatum or boric ointment to make an ounce. This was ordered rubbed into the scalp thoroughly, morning and night. All cases here reported were treated in the out patient department. They were weighed on accurate balances, the solution made up at once and administered.

Seven cases are reported. They are all boys. A number of others are still under treatment but are not included because the period of observation is not completed. There were no toxic symptoms. Six were effectively epilated. One spilled some solution and was not epilated. This patient still has active lesions; his brother, who was given the treatment the same day, has been clinically cured since January 1928. One was epilated, but reinfection occurred, probably because of inefficient home treatment. The accompanying photographs of case No. 2 show a typical course of events before, during, and after treatment.

CONCLUSION: The administration of thallium acetate in the proper dose, to selected children before the age of puberty, is the best method of epilation in cases of ringworm of the scalp.

THALLIUM ACETATE IN RINGWORM OF THE SCALP

	O. P. D. Case No.	Age	Wt. Kgms.	Date Thallium Given	Date Total Alopecia (approx.)	Date Hair Regrown (approx.)	Remarks
1	106357	4	17.3	12-15-27	1-19-28	5-17-28	Hair probably grew in sooner but patient did not return for observation when ordered. Sister now being treated. Result excellent.
2	31478	7	23.5	11-16-27	12-10-27	1-5-28	Result excellent. Case illustrated.
3	107355	3	15.0	11-28-27	12-20-27	1-10-28	Result excellent.
4	70154	1½	10.0	11-28-27	Not epilated		Some solution spilled. Brother of Case No. 3. Lesions still active.
5	106772	4	15.9	11-28-28	12-17-27	1-7-28	Hair did not grow over affected areas till 3-31-28. Result excellent.
6	107898	4	15.8	12-3-27	12-27-27	1-28-28	After epilation scalp showed many small areas of tinea which would otherwise have been missed. Result excellent.
7	29205	6	24.0	2-9-28	2-26-28	3-31-28	Retained infection. Spores found 4-14-28. Result poor.

Case Records of the Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 14341

COMA—CAUSE?

MEDICAL DEPARTMENT

A married West Indian negress thirty-five years old was brought to the Emergency Ward June 7 in coma.

A month before admission her sixth child was uneventfully delivered. She was unusually slow this time in regaining the loss of weight which was usual during her pregnancies. Five days before admission she developed throbbing frontal headaches which disappeared in two days after taking aspirin. The day of its onset she had a sense of constriction in the chest. The morning of June 5 she felt dizzy, and on trying to walk to the bathroom fell downstairs, bruising her right arm and cutting her foot. After five minutes she was able to get back to bed. She was alone in the house. That morning a physician found her blood pressure high. All that day and the next she was dizzy. For two days she had not been able to move her right arm. The morning of June 6 her breath had a bad odor. Since that morning she had not urinated. That night she went into coma from which she could not be roused. The physician found her blood pressure still high.

There was no known history of familial disease. The patient had had small-pox. During an epidemic she was in bed two weeks with influenza. Her general health had always been good. All her six children were living and well. She had had no miscarriages. Her husband denied venereal disease in himself and his wife, though he admitted several exposures.

Clinical examination showed a rather obese colored woman in coma from which she could not be roused. Lungs clear. Apex impulse of the heart not seen or felt. Percussion measurements not recorded. Heart otherwise normal. Blood pressure 175/115. Abdomen normal. Vaginal and rectal examinations not done. Right arm maintained in flexion; extension resisted. Left arm normal. Right pupil greater than left. Both fixed and slightly irregular. Fundi appeared normal. Neck not stiff. Right knee-jerk and other reactions to stimuli of the right leg less than those of the left. Bilateral Babinski. Kernig positive on the left.

Amount of urine not recorded. Both of two specimens dark red, specific gravity 1.034, a trace of albumin at both examinations, sediment of one specimen loaded with leukocytes, red blood cells and casts. A slowly centrifuged specimen showed 60 to 70 leukocytes per field, 3 to 4 red blood cells and occasional casts. Blood: hemoglobin 90 per cent, reds 5,690,000. Non-protein nitrogen 43 milligrams.

A lumbar puncture was done the day of admission. The third lumbar space was entered with slight difficulty, as the patient struggled. 5 cubic centimeters of bloody fluid was withdrawn which on centrifuging was very faintly yellow, initial pressure about 400, pulse and respiratory oscillations normal, other dynamics not done, alcohol and ammonium sulphate positive, 25,750 red cells in the first tube, 24,000 in the second, 22,750 in the third, many crenated white cells; 18 per cent polymorphonuclears, 12 per cent lymphocytes, 2000 large mononuclears, total leukocytes 42. Goldsol 1122332100. Total protein 29. Wassermann negative. At a second puncture the same day 30 cubic centimeters of fluid was withdrawn slowly, bloody as at the first tap. The fluid was withdrawn until the drops came out slowly. Initial pressure 400, final pressure 5 to 10.

Portable X-ray films of the skull showed no fracture, but were not entirely satisfactory.

Nine hours after admission and several hours after the first lumbar puncture the patient had stertorous breathing and was generally spastic. The pulse went up from 60 to 120. For two hours there were alternate periods of this condition and of her previous quiet coma. The pupils were now both dilated and fixed and neither arm or leg was spastic. Eleven hours after admission the second lumbar puncture was done. Ten minutes later the patient suddenly stopped breathing in inspiration and entered a terminal phase of absolute respiratory paralysis. Five minutes later the heart stopped beating.

DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

When patients come here in coma we are unusually prone to make mistakes in our diagnoses because we depend so much on an accurate history, which that particular condition precludes. We have very little given us up to the day of the onset.

"Since that morning she had not urinated." Of course we argue that that may be due (a) to accumulation of urine in the bladder due to coma or (b) to a failure of secretion. My guess is that it is the first.

We have really very little evidence here before we come to the physical examination. We have a high arterial tension. We have coma and apparently paralysis of one arm, which so often goes with coma. We may or we may not find something definite in the brain.

NOTES ON THE PHYSICAL EXAMINATION

"Percussion measurements not recorded." That was wise, I think.

"Fundi appeared normal." If that was a good examination that is important.

"Neck not stiff." They are looking for meningitis.

The reflexes are just the opposite of what we should expect. We generally get increased reflexes on the affected side. Again, the Kernig is on the wrong side.

That is a rather dubious, equivocal urinary sediment. It could go with a nephritis and perfectly well with a normal kidney.

The non-protein nitrogen is practically normal.

They were courageous men. They must have been perfectly sure there was not a brain tumor there, for they did a lumbar puncture. I have seen many deaths due to lumbar puncture in cases of brain tumor, the brain pressing down into the foramen magnum. They must have been very confident to exclude it. Some symptoms of it are present here. Puncture was done of course to relieve coma. It sometimes does, but it is not obvious to me that that lumbar puncture did good.

DIFFERENTIAL DIAGNOSIS

We have blood in the spinal fluid and therefore presumably blood in the brain. Hence presumably the case is cerebral hemorrhage,—cerebral hemorrhage in a person with hypertension, with presumably some enlargement of the heart, with presumably normal kidneys; and that is all that I can say. I hope we examined the brain, Dr. Mallory?

DR. TRACY B. MALLORY: Yes.

DR. CABOT: I commit myself then. I say it is cerebral hemorrhage. Which side it is on I am in doubt. I think it is probably on the left.

A STUDENT: Do you think that the lumbar punctures had any effect in producing blood in the puncture fluid?

DR. CABOT: I think it is safe to conjecture that they excluded this.

A STUDENT: How can you be sure, if the patient struggled?

DR. CABOT: You can not.

A STUDENT: There is no record of a sugar test in the urine.

DR. CABOT: That is true. I am glad you pointed it out. But I do not believe that she died of diabetes. Do you?

A STUDENT: Do you think the last baby had anything to do with this? There are no findings in the viscera of toxemia.

DR. CABOT: I think not. She was well during most of this month. If she had not had the cerebral hemorrhage she would have been well a long time more, I think.

A STUDENT: The fundi were normal. Would not the lumbar puncture be therefore justified?

DR. CABOT: That is a good point. The absence of edema in the retinae tends to exclude tumor and tends to make it safe to do a lumbar puncture, though it is not absolutely reliable. But I imagine it was done chiefly for diagnosis, which of course would be important if there was fever.

A STUDENT: Do you consider falling down stairs immediately responsible for the lesion?

DR. CABOT: No. I think it is the other way. Sometimes it is a question whether or not a person falls accidentally, strikes his head and gets a fracture or becomes dizzy from brain lesion and so fails to obstruct his fall. It is very hard to decide. But there is no fracture found by the X-ray.

A STUDENT: Which came first, the hypertension or the cerebral hemorrhage?

DR. CABOT: I think probably the hypertension.

A STUDENT: Do you think she had more than one hemorrhage?

A STUDENT: It is stated that the blood pressure before delivery was normal.

DR. CABOT: That is rather a staggering fact. It is only a month since then. That is a short time to get up a high blood pressure. That rather tends to show that the hypertension is due to the cerebral hemorrhage rather than vice versa.

A STUDENT: Why did they do the second lumbar puncture?

DR. CABOT: I do not know. I suppose they thought that perhaps they did not get a fair specimen the first time. But as long as they got crenated red cells I think they got enough evidence.

A STUDENT: What do the urinary findings mean? She had bloody urine, leukocytes and albumin.

DR. CABOT: I should not say she had bloody urine. By that phrase we ordinarily mean gross blood that you can see with the naked eye. You see fully as much as this after a foot ball game in normal men, fully as much after a boat race. You see as much as this in pneumonia when the kidney does not show anything post mortem.

A STUDENT: According to this the specific gravity is fixed.

DR. CABOT: High fixed specific gravity does not mean anything, so far as I know. It is perfectly conceivable that there is a nephritis, but I do not think we have evidence of it. The pupils in coma are useless. I have seen a great many pupillary changes in cases of coma and very seldom have found anything post mortem to explain them.

A STUDENT: Are there not some things here suggesting syphilis?

DR. CABOT: What?

A STUDENT: Cerebral hemorrhage in a young person.

DR. CABOT: Yes. She is young for cerebral hemorrhage.

A STUDENT: Isn't that goldsol suspicious of luetic disease?

DR. CABOT: I should not say so. Of course we can not with certainty exclude lues. We never can. We have a negative Wassermann, but that is not enough to exclude the disease. I think we have very little evidence of it aside from that point mentioned, that lues is a common cause of early cerebral hemorrhage.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Intracranial hemorrhage.

DR. RICHARD C. CABOT'S DIAGNOSIS

Cerebral hemorrhage.
Hypertension.
Hypertrophy and dilatation of the heart.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Cerebral hemorrhage.
Acute intracapillary glomerulonephritis. (Nephritis of pregnancy?)

2. *Secondary or terminal lesions.*

Focal hemorrhages in the liver, slight.
Subinvolution of the uterus.

DR. TRACY B. MALLORY: This was a puzzling case clinically, and it is still something of a puzzle from a pathologic point of view.

To start with the most obvious things, she did have a cerebral hemorrhage. In the left parietal lobe was a large clot and surrounding softening of the brain tissue 9 centimeters in diameter. There was also a considerable degree of subdural and subpial hemorrhage scattered rather irregularly over the entire surface of the brain. That checks pretty well with the clinical findings, with the one definite symptom, paralysis of the left arm, and left parietal intracranial hemorrhage to go with that. The other reflex changes were rather vague and might easily have been caused by the subpial hemorrhage on the surface.

The heart weighed 350 grams. That is very slight enlargement for a fairly large woman. Consequently we must presume the hypertension was not of long duration, and that agrees with the statement that the blood pressure was normal some time before her delivery.

The liver was considerably enlarged. In gross I was not able to make out anything abnormal about it. Histologically however we did find a few small focal hemorrhages and minute healed areas of focal necrosis.

The kidneys weighed 325 grams. They were very deep red in color. The markings were normal. There were no hemorrhages beneath the capsule. The cortex measured 8 millimeters, perhaps slighly increased. Microscopic examination showed an extremely acute intracapillary glomerulonephritis, every glomerulus being filled with polymorphonuclear leukocytes, 20, 30 and 40 of them in each glomerular cross section.

Now to try to put the thing together. The glomerulonephritis could have caused the hypertension, possibly could have caused the cerebral hemorrhage. A nephritis, focal lesions in the liver, and cerebral hemorrhage are a combination very suggestive of eclampsia. Nine weeks after delivery is a long time for eclampsia. I have seen it two weeks after delivery, but no later than that. What is your experience, Dr. Cabot?

DR. CABOT: I never heard of it after so long a period.

DR. MALLORY: It certainly is not a typical case. Except for the long period—and I do not think that it is utterly impossible that eclampsia should be delayed as long as that—that would be the best explanation for the combination of the lesions.

DR. CABOT: There was no special evidence of syphilis?

DR. MALLORY: Nothing at all.

A STUDENT: Was a blood culture done?

DR. MALLORY: There was a blood culture post mortem that was negative, but not during life.

A STUDENT: What is the etiology of eclampsia?

DR. CABOT: Nobody knows.

A STUDENT: Did this woman come out of her coma before she died?

DR. MALLORY: No.

DR. CABOT: There are various degrees of coma. One can answer questions and act reflexively, and think of course. It could not have been a very deep coma.

CASE 14342

A CLASSICAL CLINICAL PICTURE WITH PUZZLING PATHOLOGICAL FINDINGS

MEDICAL DEPARTMENT

A married American woman forty years old entered April 10. The complaint was coma of one day's duration.

For three years she had urinated four or five times at night. For about a year she had occasionally complained of tinnitus. She had had dyspnea and more fatigue on exertion than usual and had not felt well. Three months before admission she had a severe cold in the chest. With the onset she vomited occasionally after coughing. Ever since that time she had had pain across the middle of the chest and about a quarter of a tumblerful of whitish sputum a day. For two months she had urinated only once or twice at night. For a month she had been worse, with great fatigue and weakness and progressive vomiting immediately after eating. For two weeks she had kept almost nothing down, not even fluids. For two weeks she had had difficulty in breathing because of obstruction in the throat and nostrils. For the past week she had been much worse, drowsy and breathing

heavily. Two days before admission she had two convulsions. Her husband described one of these as beginning with stiffening out, turning her head to one side. Both arms and facial muscles began twitching. She became unresponsive. After about twenty minutes of clonic convulsive movements during which she bit her tongue and was incontinent of urine the convulsions ceased. The day before admission she vomited everything. She entered semicomatose.

Two aunts died of kidney disease in pregnancy. A cousin also died of kidney disease.

The patient had scarlet fever at twelve years. Since her marriage she had had no illnesses except tonsillitis once and complications during her two pregnancies. At the first, fifteen years before admission, she vomited throughout the whole period. She had twitching of the facial muscles, numbness of the hands and slight mental confusion a week before term. Edema of the face and legs developed and did not clear up for several weeks after delivery. During the second pregnancy she had a very stormy time, with a high blood pressure, generalized edema, nausea, vomiting and albuminuria. At about six months she was so ill that labor was induced. The child lived only a few minutes. Since that time she had been under constant medical care and had followed advice very well.

Clinical examination showed a well nourished woman, drowsy but responsive, with flushed face, lying breathing with difficulty and stridor, most marked on expiration. Skin, mouth and tongue very dry. Tongue protruded in midline with fine tremor. Roof of mouth and posterior pharyngeal wall coated with a dry tenacious membrane which when detached showed red mucous surfaces. A line of erythema extending over the nose up the forehead. Nose obstructed, especially on the right. Septum markedly deviated to the right. Diminished resonance over the right chest with increased expiration at the apex and fine crepitant râles below the angle of the scapula. Bronchial breathing at the right apex behind, with increased voice sound. Inspiratory wheeze over the entire chest. Heart not enlarged, rapid, regular. Pounding impulse over the precordia and under the xiphoid process. A harsh systolic murmur, best heard at the apex, transmitted towards the axilla. Artery walls normal. Blood pressure 140/55 to 180/100 to 135/90. Abdomen tense. Muscles tightened with inspiration. No tenderness elicited. Examination unsatisfactory on account of spasm and muscle contraction with respiration. Pupils normal. Left knee-jerk greater than right. Ankle-jerks not obtained. No edema. Fundi: vessels tortuous, one small black spot beside a vessel in the retina of the left eye. No exudate made out.

Amount of urine not recorded, specific gravity 1.006 to 1.014, cloudy at both of two examinations. A catheter specimen at admission showed a trace of albumin, a slight trace of diacetic acid, sediment 10 to 20 leukocytes per field. Another April 11 showed no albumin or diacetic acid, 10 to 15 leukocytes and 3 to 4 red cells per field; culture, enterococcus. Renal function not recorded. Blood: 15,800 leukocytes, 85 per cent polymorphonuclears, many of them young, 55 per cent hemoglobin, reds 3,050,000, no achromia, slight anisocytosis, possibly very slight poikilocytosis; three normoblasts seen; platelets normal. Hinton negative. Non-protein nitrogen April 10 180. April 11 blood sugar 152 milligrams, CO_2 combining power 5.2 volumes per cent, creatinin 23.4 milligrams. April 12 calcium 6.5 milligrams, inorganic phosphate 13.6 milligrams.

Temperature 98.2° to 103.4°, rectal. Pulse 118 to 138. Respirations 23 to 41.

X-ray showed both diaphragms in the usual position, sharp in outline. The lung fields and apices were essentially clear. There was no definite evidence of pulmonary tuberculosis. All films of the sinuses showed some motion, no definite clouding.

The afternoon after admission the patient was in coma and still aerating intensely. Catheterization gave two ounces of urine. That day she was given 1500 cubic centimeters of 2 per cent sodium carbonate solution on three occasions, once intravenously, twice subpectorally. Later 1750 cubic centimeters of glucose in saline was given subpectorally and the same amount under the skin of the thighs. The non-protein nitrogen came down to 176. The morning of April 12 she died.

Discussion

BY A. V. BOCK, M.D.

NOTES ON THE HISTORY

"Difficulty in breathing because of obstruction in the throat and nostrils." That is a misleading statement, because the altered character of breathing was not due to obstruction. There is nothing said of a history of trouble in the throat and nostrils previous to this.

The history of the present illness is quite characteristic of a very severe terminal nephritis with an increasing degree of uremia in the past two months. About the only thing that has not been mentioned in the history is generalized pruritus. Except for that the clinical picture is practically complete.

This history of relatives dying of kidney disease has nothing to do with the diagnosis or prognosis in this case.

It would be interesting to know how long she was ill in bed with scarlet fever and whether she had acute nephritis as a complication. She may very well have had it.

She appears to have had eclampsia in both pregnancies. It is a question in my mind whether the second pregnancy should not have been terminated earlier, in view of the history of her course during the first.

NOTES ON THE PHYSICAL EXAMINATION

The condition of the mouth means nothing except that it had been neglected. She had been sick for weeks without proper care. The way the membrane peeled off might suggest a diphtheritic membrane, but that is very unlikely.

One thinks of a demarcated sign like the line of erythema extending over the nose as erysipelas; but instead of a line one expects to see more of an area involved. This might perfectly well be the beginning of a virulent erysipelas.

She might now be having a terminal bronchopneumonia.

The heart was not enlarged. That is not what one would expect with a history of this sort. Usually a striking case such as this is associated with hypertension and gradual hypertrophy of the heart. Usually quite a big heart is found at the time the patient enters the hospital.

The blood pressure does not give us a fair idea of what the pressure was while this patient was up and about, active and feeling well. It may very well have been 200 to 250.

One would expect albuminuric retinitis at this stage.

One would expect the hemoglobin to be something like 40 or 50 per cent. It is not uncommon to find red counts of 1,500,000 to 2,500,000 with a clinical picture of this sort.

The non-protein nitrogen is only moderately high for this picture. It is usually much higher in severe uremia.

If the carbon dioxide of the blood is a true finding it is extremely low. The final picture is that of coma due to acidosis arising as a terminal state in chronic nephritis, the patient having been in uremia for weeks.

DIFFERENTIAL DIAGNOSIS

I can think of no other really positive diagnosis in this case except terminal nephritis associated with some hypertension, moderate hypertrophy of the heart, and a very small granular type of kidneys that will show under the microscope marked arteriosclerosis and degeneration of the tubules together with the wiping out of a great many glomeruli.

A STUDENT: Were they thinking of tetany when they did the blood culture?

DR. BOCK: It is very difficult to tell what they were thinking of. Everything is done nowadays. Few diagnoses are dependent on that type of work, and it plays only a minor rôle as a rule. The house officers do a tremendous amount of this type of thing, largely for their own information.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Chronic bronchitis.
Uremia.
Bronchopneumonia.

DR. A. V. BOCK'S DIAGNOSIS

Chronic nephritis, arteriosclerotic.
Hypertension.
Hypertrophy of the heart.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Chronic glomerulonephritis.
Secondary vascular nephritis.

2. *Secondary or terminal lesions.*

Arteriosclerosis.
Toxic necrosis of the malpighian corpuscles.
Uremic pericarditis, slight.

DR. TRACY B. MALLORY: There was quite a marked nephritis present, the kidneys weighing only 175 grams. There was considerable arteriosclerosis, and a slightly hypertrophied heart. It weighed only 360 grams, but she was a small woman. That is hypertrophy, though less than we should expect. The active process in the kidneys seems to be purely vascular, as shown by very marked degeneration of the arterioles throughout the body, but most marked in the kidneys, where the intimal thickening is extreme. There was sclerosis of large numbers of the glomeruli, some showing fibrous crescents as evidence of an old proliferative process. The only progressive changes were degenerative in type. The corresponding tubules were atrophied and the remaining tubules were much dilated. Vascular nephritis does not ordinarily begin in a young woman and last over such a period of time as this. Usually in a young person it is an acute disease of a three to five year period rather than fifteen. Certainly at the present time the only acute progressive lesions in the kidneys are vascular. But the long duration of the disease and the histologic finding of old fibrosed "crescents" about the glomeruli suggest that the process originated in a glomerular nephritis in her youth.

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CISTERNAL AND LUMBAR PUNCTURE

SINCE the original paper by Ayer on cisternal puncture in 1919[1] and the second paper the next year on the same subject[2], there has been an increasing growth of interest in the use of this method of obtaining cerebrospinal fluid for the diagnosis of nervous diseases. The procedure has distinct advantages over lumbar puncture and opinions have recently been expressed that cisternal puncture may rightfully replace lumbar puncture as one of our most useful aids to diagnosis. The two advantages of cisternal puncture are, first, the relative ease with which the puncture can be made through a space somewhat larger than that usually afforded by the lumbar route and, secondly, the freedom from post-puncture headache, which is such an annoying complication of ordinary thecal puncture in the lumbar region. These must be weighed, however, against the dangers of cisternal puncture, which are probably much greater than those of lumbar puncture, although as time goes on and more cisternal punctures are done, it would seem that the dangers at first emphasized were, perhaps, over-emphasized and that a cisternal puncture should not, in the hands of a capable physician, lead to any more bad results than lumbar puncture. One must admit that the possibility of puncturing the medulla should not be lost sight of, but if the method described by Ayer is carefully followed, there is no reason to believe that this unfortunate result should ever take place except in patients that are not suitable for either puncture. That type of patient is now well known. Increased intracranial pressure, especially if it is due to brain tumor, and more especially if the tumor lies in the posterior fossa of the cranial cavity, should be a definite contra-indication to lumbar or cisternal puncture. It is quite conceivable that a cisternal puncture under these circumstances might lead to rapid death of a patient if the pressure is much increased below the tentorium, the mechanism being similar to that which has been rarely but definitely found in cases where lumbar puncture has been done.

If the dangers, therefore, are well known and the anatomy of the region is perfectly familiar to the operator, cisternal puncture can be done as an office procedure, whereas lumbar puncture so often leads to post-puncture headache that the use of this method of obtaining cerebrospinal fluid from patients who are ambulatory and who, presumably, would leave a physician's office within an hour or so, is a doubtful method of diagnosis.

It has been shown repeatedly by Ayer and others and, more recently, by Saunders and Spiegel[3] that the fluids obtained from the two loci are practically the same, thus removing one of the arguments against cisternal puncture, as far as the diagnosis from the fluid is concerned. The only differences found by Saunders and Spiegel were slightly fewer cells in the cisternal fluid; the globulin reaction was not quite so strong; and there was some variation in the colloidal gold test; none of which were important. These authors find "distinct advantages to the patient following cisternal puncture", and these advantages are enough, in their opinion, to justify the use of the cisternal puncture method.

Few clinicians, at the present time, would be willing to give up lumbar puncture entirely and replace it by cisternal puncture. The dangers, although perhaps not so great as were pointed out a few years ago, are considerably more in cisternal puncture than in lumbar puncture and although the patient may be more comfortable afterwards, one is hardly justified in using this as an excuse for a more dangerous procedure if, by a less dangerous one, practically the same fluid can be obtained and as much accomplished in the diagnosis of nervous disease.

REFERENCES

1 Am. Jour. Med. Sc., 1919, CLVII, 789.
2 Arch. Neur. and Psychiat., 1920, IV, 529.
3 Jour. Am. Med. Asso., 1928, XCI, 630.

A CRITICISM OF AMERICAN MEDICINE

THE rapid evolution of medicine has brought about many problems connected with medical practice, particularly as regards the accessibility

of present day scientific knowledge to the great mass of the American people. Evidences of dissatisfaction with the present scheme crop up here and there, and efforts are being made along various lines to do away with the most obvious faults.

In "American Medicine and the People's Health" Harry H. Moore, an Economist in the United States Public Health Service, has brought together a great number of facts bearing on this question; his conclusion, based upon the information which he has collected, is that medicine in this country is not doing all or anywhere near all that it might do for the American public. In his own words, "The failure of society efficiently to apply the knowledge now in its possession regarding the cure and prevention of disease is due partially to the fact that the development of scientific materials, equipment, technique and personnel has been more rapid than the organization of personnel and agencies for the utilization of these facilities. . . . This lag has resulted in serious maladjustment, of which there are at least six specific manifestations. First, there is an inadequacy of personnel and of financial support among official agencies. Second, there is a shortage of physicians, hospitals, convalescent homes, dispensaries, dentists, and nurses, and in the cities, where a more nearly adequate supply of private practitioners is to found, they often appear to be inaccessible. Third, many people are unable to pay the present cost of scientific medical service, not so much because physicians are charging high fees (although some of them do), as because, in its present relatively unorganized condition, medical service is necessarily expensive, and because the people will not and cannot save sufficient money to provide for the emergencies of sickness. Fourth, a large proportion of men and women are patronizing cultists or quacks or utilizing various inferior types of treatment, partly because they are dissatisfied with the service they obtain from regular practitioners. Fifth, physicians themselves are not receiving in many cases adequate income, and many general practitioners are handicapped for lack of hospital facilities. Finally, there is an insufficiency of interest among private practitioners in preventive medicine."

With these criticisms no fair-minded observer can disagree. Moore has analyzed the situation accurately and with a sympathetic understanding of the problems of physicians and patient. He offers no panacea to overcome these defects. His book is a statement of present conditions, accompanied by a plea for co-öperation between the "statesmen" of medicine, of public health work, of social science and of legislative bodies in an effort to utilize more effectively the knowledge and equipment which we already have. He does predict the "probable next steps" in the future development of organized medicine. These, he says, will consist of

1. The establishment of additional hospitals and clinics for persons of moderate means, with the aid of the state when necessary.
2. The extension of preventive medicine both in private practice and in public health work.
3. The inauguration of preliminary steps to make adequate health insurance available to all the people, independently of medical service.
4. The conduct of community surveys to furnish a basis for the co-ördination of unit services into well-balanced programs.

In this book Moore has placed the problem squarely before the medical profession; any physician given at all to reflection must admit that his thesis is sound and that something must be done. Moore, as a public health economist, is naturally favorable to the further participation by the government in matters of public health. He is also, we believe, a bit inclined to place too much emphasis on the value of personal preventive medicine. We do not agree with him that paying a physician to keep a person well is a practicable or indeed a fair method of securing medical services. These are but minor points; in the main we agree with Moore absolutely. He has written an excellent and a valuable book. We hope it will have the attention it deserves, and the results that he wishes.

SWIMMING POOLS

THE New York State Health Council, in an effort to keep swimming pools up to a high standard of purity has recently so amended the Sanitary Code that pools are subject to stringent regulations at all times. These regulations provide for construction and design, adequate toilet and shower facilities, bacterial counts, visible cleanliness and the exclusion of diseased persons.

The regulations are interesting insofar as they denote a recognition of the possibilities of swimming pools as disease carriers, and an inclination to abate the nuisance of them. Whether or not any such regulations can be more than slighty effective is, to our minds, not even doubtful.

Indoor swimming pools are removed from the sterilizing influence of the direct rays of the sun. During comparatively short periods, large numbers of persons often immerse themselves in a comparatively small amount of stationary water. Pools are most used during those months of the year when acute upper respiratory infections are prevalent.

The absolute detection of these infections in prospective bathers is impossible. The absolute cleansing of the prospective bather's body, including its various orifices is impossible. Into these pools the bathers' bodies are plunged; the water of the pools irrigates their nasal passages and their mouths; they spit into them; perhaps even more obnoxious happenings occur. No disinfectants capable of exterminating mucus-en-

cased bacteria would be tolerated by the mucous membranes of the eyes and nose.

It seems a scathing indictment, but it is impossible to believe that even the most rigidly inspected pool can fail to be anything but a veritable refuge of pathogenic bacteria.

THIS WEEK'S ISSUE

CONTAINS articles by the following authors:

ERDMANN, JOHN F. M.D. University and Bellevue Hospital Medical College (Bellevue Hospital Medical College), 1887. F.A.C.S. Formerly, Professor Practical Anatomy, Bellevue Hospital Medical College, Visiting Surgeon, Gouverneur Hospital, and Workhouse and Almshouse Hospital. Now, Professor of Surgery, New York Post-Graduate School and Hospital, Director of New York Post-Graduate School and Hospital. Consulting Surgeon at Nyack Hospital, New York; Greenwich Hospital, Connecticut; Mt. Vernon Hospital, New York; Manhattan State Hospital, New York; Nassau State Hospital, New York. His subject is: "Surgery of the Gall-Bladder". Page 703. Address: 60 West 52nd Street, New York.

LAHEY, FRANK H. M.D. Harvard, 1904. F.A.C.S. Surgeon to the New England Deaconess Hospital; Surgeon to the New England Baptist Hospital; Director of Surgery Lahey Clinic. His subject is: "Surgery of the Bile Ducts". Page 707. Address: 605 Commonwealth Avenue, Boston.

JUDD, E. STARR. M.D. University of Minnesota, 1902. F.A.C.S. Head of one of the Sections of Surgery, The Mayo Clinic. His subject is: "Sequelae and Accidents of Biliary Surgery". Page 712. Address 102 2nd Avenue, S. W., Rochester, Minnesota.

JONES, DANIEL F. A.B., M.D. Harvard, 1896. F.A.C.S. Chief Surgeon, East Surgical Service, Massachusetts General Hospital. Surgeon, New England Deaconess Hospital. Chief of Staff, Palmer Memorial Hospital. His subject is: "Relation Between Gall Bladder Disease and Pancreatitis". Page 716. Address: 195 Beacon Street, Boston.

WHITE, FRANKLIN W. S.B., M.D. Harvard, 1896. Instructor in Medicine, Harvard University, Visiting Physician, Boston City Hospital. His subject is: "Some Medical Aspects of the Disease of the Gall Bladder and Bile Passages. Page 719. Address: 322 Marlboro Street, Boston.

APPEL, BERNARD. M.D. Tufts, 1923. Junior Visiting Physician for Diseases of the Skin, Boston City Hospital. Assistant, Visiting Physician, Department of Syphilis, Massachusetts Homeopathic Hospital. Assistant Dermatologist, Beth Israel Hospital. Teaching Assistant in Dermatology, Tufts College Medical School. Clinical Instructor in Syphilis, Boston University Medical School. His subject is: "Thallium Acetate in Ringworm of the Scalp". Page 733. Address: 485 Commonwealth Avenue, Boston.

The Massachusetts Medical Society

THE COUNCIL MEETING

THE stated meeting of the Council was held in John Ware Hall, Boston Medical Library, October 3, 1928, at 12 o'clock and was called to order by the President.

Appropriate reference was made to the death of Dr. A. H. Hodgdon, a member of the Council, who died recently.

The President called attention to the legislative program for the coming winter, referring to the large number of new members in the House and Senate which increases the probability of securing favorable legislation. Thus far the only important matter for action is the bill advocated by Dr. S. B. Woodward for extending the requirement for vaccination to pupils in private as well as public schools. While it is probable that a bill to register chiropractors will be introduced and must be opposed its enactment is not likely and the committee will be prepared to oppose that and any other pernicious bills.

The Committee of Arrangements, after considering various locations and plans, reported the probability of securing the Copley Plaza for the annual meeting next June which will be held June 10, 11, 12.

It is expected that the exhibits will be important features of the meeting. The President raised the question as to the advantage of having the Shattuck Lecture follow the annual banquet in the evening. The Committee having in charge the selection of the Shattuck Lecturer reported that Dr. William H. Robey had been secured.

Several of the committees made reports of progress which required no action and the regular business went through without debate so that the time consumed was brief, making the meeting one of the shortest in the history of the Society. This does not mean that the business was unimportant and it is pertinent to recommend careful perusal of the Secretary's reports of the proceedings which are model contributions to the current history of the Society. All who are concerned in the doings of the Society should endeavor to keep in mind the details of the work of its executive body.

MISCELLANY

SPECIAL FEATURES OF THE AMERICAN PUBLIC HEALTH ASSOCIATION CONVENTION

An interesting feature of the 57th annual convention of the American Public Health Association con-

vention, to be held in Chicago at the Stevens Hotel, October 15th to 19th, inclusive, will be an exhibit of five "traveling health departments," or railroad cars equipped so that they can be rushed to the scene of disaster or epidemic, or so that they can carry health service from a central point to isolated districts. These will be stationed on the Illinois Central terminal tracks. Automobile health equipment will be on view in Grant Park, and 200 exhibits of the most modern health apparatus will be displayed in the Stevens exhibition hall.

This year's convention will be the largest in the annals of public health history. Over 3000 delegates will attend, including doctors, public health nurses, city and state health officers, hygienists, educators, hospital officials, sanitary engineers, and social workers. The convention has been divided into eleven main sections, covering all the chief health activities and their allied interests. Each section will be directed by an authority in that particular field. The American Child Health Association and the American Social Hygiene Associations are to meet with the American Public Health Association this year.

RESPIRATORS FOR PROTECTION AGAINST POISONOUS SPRAYS

Efficiencies of Painters' Respirators for Filtering Lead Paint, Benzol, and Vitreous Enamel Sprays

Surgeon General H. S. Cumming, of the U. S. Public Health Service, has recently announced (Public Health Bulletin No. 177) the results of an investigation undertaken at the request of a committee appointed by the National Safety Council. This investigation has been made by the United States Bureau of Mines and the National Safety Council in co-öperation with the United States Public Health Service to determine the value of respirators as a means of protection from the hazard of spray painting resulting from exposure to lead, benzol, and silica. The specific questions proposed by the National Safety Council to be answered were as follows:

1. What filtering material, if any, is adequate
   (*a*) To reduce the lead content of the air to which a spray coater is exposed from 200 milligrams per cubic meter to 0.6 milligram per cubic meter?
   (*b*) To reduce the amount of benzol under similar conditions from 2,000 to 75 parts per million?
   (*c*) To reduce the number of silica particles under similar conditions from 200,000,000 to 100,000 per cubic meter as determined by the Palmer method?
2. How long would such a layer function?
3. How do certain typical masks now available measure up to this standard?

The concentrations stated above for lead and benzol should not be construed as being those to which spray painters are commonly exposed. They represent more nearly the high concentrations which can quickly cause sickness and are to be considered as extremes.

It may be stated, as a result of the tests, that in general the respirators with cotton, paper, or fabric filters remove 90 per cent. or more of the lead from air carrying paint mist. These respirators restrain none of the solvent vapors, however; but the addition of a canister or cartridge of activated charcoal to the respirator removes all solvent vapors until the charcoal becomes saturated.

The useful life of filters is determined by their increase in resistance, which necessitates changing for fresh filters at intervals of several hours. When charcoal is saturated, the cartridge must be exchanged for a fresh one. Canisters of the size used with gas masks may last for weeks before a change is necessary.

The respirators were somewhat less efficient against the silicadust sprays, but they restrained 24 per cent. or more of the dust from the air passed through them; most of them were more than 50 per cent. efficient.—*United States Public Health Service.*

THE OSLER CLUB*

The anniversary of the birthday of Sir William Osler was celebrated in London on July 12 by the Osler Club. This club, which was founded in his memory and under the inspiration of his writings in April last for the study of the history of medicine, entertained a number of guests at an informal meeting. A reproduction of the Sargent crayon sketch of Sir William Osler, lent by the Royal Society of Medicine, occupied the place of honour, and through the kindness of several London librarians pictures of the triumvirate of British Medicine—Linacre, Harvey, and Sydenham—were displayed, together with some of Osler's favourite books—Religio Medici, the Anatomy of Melancholy, Lettres de Gui Patin, and works by the Swiss Osler, Conrad Gesner. Sir Wilmot Herringham, delivering the first Oslerian Oration, spoke of Osler's love of rare cases, not because they represented extremes of normal physiology, but because their rarity appealed to him as an artist. He told how the young Osler, inspired by the German educational "system" and by what he had seen of practical training here, completely altered the outlook of medical teaching in America, how later he was responsible for the establishment of clinical units in this country, and of his part in the launching of the *Quarterly Journal of Medicine*. Dwelling happily on Osler's personal charm and affectionate nature, Sir William Herringham closed a speech notable for its genuine feeling and its dignified simplicity. Dr. Meynen, representing the German Ambassador, in proposing a vote of thanks, wished particular success to a club one of whose aims was the promotion of international goodwill, and the name of whose patron saint was held in such reverent esteem in Germany. Sir Humphry Rolleston pronounced his Oslerian Eulogy on "Osler as a human being." It was, he said, the combination of so many different personalities in one body that made Osler the beloved man that he was. No report could do justice to the charm of the eulogy, the final words of which summed up the spirit of the whole evening—"We shall never look upon the like of such a man again." Professor D. Fraser-Harris opened the symposium with a paper on Osler as physiologist. Dr. H. H. Scott spoke on Osler as naturalist and comparative pathologist; Dr. Andrew Balfour on Osler and tropical medicine; Sir Squire Sprigge on Osler as a literary man; Sir Walter Fletcher on Osler as a friend; Dr. Franklin Martin, President-Elect of the American College of Sur-

*Reprinted from the British Medical Journal, July 21, 1928.

geons, on Osler as an organizer; Dr. J. D. Rolleston on Osler as epidemiologist. Dr. Ernest Jones brought the symposium to a delightful conclusion with some personal reminiscences. The exhibition of a selection of Osler's writings, literary and scientific, of biographical appreciations, and of books inspired by him, bore further witness to the breadth of the man and to the many-sided nature of his interests and enthusiasms. Among other guests of the club were Sir Thomas Lewis, Dr. Burton Haseltine of Chicago, Messrs. Geoffrey Keynes and S. Damian, Dr. Henry Viets of Boston, and Mr. Philip Franklin.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS

AUGUST, 1928

GENERAL PREVALENCE

The total reported incidence of communicable diseases for August was the lowest for that month since 1924.

The incidence of anterior poliomyelitis was high due to several localized outbreaks.

The reported incidence of chicken pox, pneumonia, measles and scarlet fever was within endemic limits.

The reported incidence of diphtheria, German measles, mumps and whooping cough was low.

A new low record for August was reached in the incidence of typhoid fever and pulmonary tuberculosis.

RARE DISEASES

Anterior Poliomyelitis was reported from Abington, 1; Arlington, 2; Athol, 4; Belmont, 1; Boston, 11; Brockton, 2; Brookline, 1; Cambridge, 1; Chelsea, 1; Chicopee, 1; Fall River, 5; Fitchburg, 6; Lawrence, 1; Leominster, 3; Lexington, 1; Lowell, 1; Lunenburg, 1; Lynn, 2; Malden, 1; Medfield, 1; Medford, 3; Milton, 1; Newton, 13; Orange, 9; Peabody, 2; Pittsfield, 5; Prescott, 1; Reading, 1; Revere, 1; Salem, 1; Somerville, 1; Springfield, 2; Sudbury, 1; Wakefield, 1; Walpole, 1; Waltham, 25; Watertown, 47; Weymouth, 1; Worcester, 2; total, 165.

Anthrax was reported from Haverhill, 1; Lynn, 1; total, 2.

Dog-bite requiring anti-rabic treatment was reported from Arlington, 2; Boston, 17; Braintree, 1; Cambridge, 1; Chelmsford, 1; Danvers, 3; Hudson, 1; Littleton, 1; Lowell, 14; Medford, 1; Merrimac, 1; Needham, 2; North Adams, 1; Peabody, 1; Revere, 13; Waltham, 1; West Springfield, 1; Winthrop, 4; total, 66.

Dysentery was reported from Boston, 1; Chelsea, 1; Holyoke, 1; Leominster, 1; total, 4.

Encephalitis lethargica was reported from Hingham, 1; Lowell, 1; Malden, 1; Wakefield, 1; Worcester, 2; total, 6.

Epidemic cerebrospinal meningitis was reported from Agawam, 1; Boston, 3; Fall River, 1; Northampton, 1; Springfield, 1; Westport, 1; total, 8.

Malaria was reported from Boston, 2; Malden, 1; total, 3.

Pellagra was reported from Boston, 1; Chelsea, 1; Monson, 1; total, 3.

Rabies was reported from Boston, 1 (Wellesley case); total, 1.

Septic sore throat was reported from Ashfield, 1; Boston, 10; Brookline, 1; Canton, 1; Dartmouth, 1; Gardner, 1; Greenfield, 1; Lowell, 1; Melrose, 1; Northboro, 1; Webster, 2; Williamstown, 3; Worcester, 2; total, 26.

Smallpox was reported from Bourne, 1; Leominster, 1; total, 2.

Tetanus was reported from Newton, 1; total, 1.

Trachoma was reported from Boston, 2; Westboro, 1; total, 3.

Trichinosis was reported from Fall River, 2; Lynn, 1; total, 3.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

DISEASE	Cases in Entire Population				Case Rates per 100,000 Pop.		
	Aug. 1928	Aug. 1927	Prosodemic Index	Epidemic Index	Aug. 1928	Aug. 1927	Expected Rate***
ALL CAUSES	2,794	3,034	-	-	64.6	71.1	-
Ant. Poliomyelitis	165	174	72*	2.3**	3.8	4.1	1.7
Diphtheria	175	216	274*	.6**	4.0	5.1	6.3
Measles	325	253	452*	.7**	7.5	5.9	10.5
Pneumonia, Lobar	74	133	72*	1.0**	1.7	3.1	1.7
Scarlet Fever	225	349	284*	.8**	5.2	8.2	6.6
Tuberculosis, Pul.	380	410	292*	1.3**	8.8	9.6	6.8
Typhoid Fever	46	67	56*	.8**	1.1	1.6	1.3
Whooping Cough	389	365	668*	.6**	9.0	8.5	15.4
Chicken Pox	81	72	-	-	1.9	1.7	-
German Measles	10	8	-	-	.2	.2	-
Influenza	12	21	-	-	.3	.5	-
Mumps	59	145	-	-	1.4	3.4	-
Tuberculosis, O.F.	84	70	-	-	1.9	1.6	-

*This Index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927, issue of the BOSTON MEDICAL AND SURGICAL JOURNAL.

‡Calculated from the Prosodemic Index.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1927 AND SEVEN YEAR AVERAGE MONTH ENDING SEPTEMBER 1

DISEASES	1928					1927			
	Wk. Ending Aug. 11	Wk. Ending Aug. 18	Wk. Ending Aug. 25	Wk. Ending Sept. 1	Average cases reported for week corresponding to Sept. 1 for past seven years.	Wk. Ending Aug. 13	Wk. Ending Aug. 20	Wk. Ending Aug. 27	Wk. Ending Sept. 3
Actinomycosis	-	-	-	-	-	-	-	-	-
Anthrax	1	-	-	-	-	-	-	-	-
Botulism	-	-	-	-	-	-	-	-	-
Cerebrospinal Men.	-	3	1	2	-	1	-	-	-
Chickenpox	5	1	4	1	4	15	10	2	11
Conjunctivitis Inf.	-	-	-	-	-	-	-	-	-
Diphtheria	11	7	9	10	21	33	15	19	8
Dysentery Amoebic	-	-	-	-	-	-	-	-	-
Dysentery Bacillary	-	3	-	-	1	-	-	-	1
Encephalitis, Epid.	1	-	-	1	-	2	1	-	1
Favus	-	-	-	-	-	-	-	-	-
German Measles	4	-	2	3	-	-	-	1	1
Hookworm Infection	-	-	-	-	-	-	-	-	-
Influenza	2	2	1	5	-	-	1	1	2
Leprosy	-	-	-	-	-	-	-	-	-
Malaria	-	1	-	-	1	2	-	-	2
Measles	39	19	11	13	7	6	6	11	4
Mumps	7	7	10	9	2	1	3	6	2
Paratyphoid Fever	-	-	1	1	-	2	-	1	-
Pneumonia (Broncho)*	12	5	7	14	11	6	1	6	17
Pneumonia (lobar)	7	5	7	15	6	5	12	7	8
Poliomyelitis	3	5	2	4	5	8	17	12	19
Scarlet Fever	7	5	4	7	13	8	13	8	3
Septic Sore Throat	-	-	-	2	3	1	-	2	-
Smallpox	-	-	-	-	-	-	-	-	-
Tetanus	-	-	1	-	-	-	1	1	1
Trachoma	-	-	-	-	-	-	-	-	-
Trichinosis	-	-	-	-	-	-	-	-	-
Tuberculosis (Pul.)	33	29	20	26	29	24	25	14	17
Tuberculosis (O.F.)	5	7	1	5	2	2	2	1	4
Typhoid Fever	2	7	6	4	10	3	5	2	3
Tularemia**	-	-	-	-	-	-	-	-	-
Typhus Fever	-	-	-	-	-	-	-	-	-
Undulant Fever**	-	-	1	-	-	-	-	-	-
Whooping Cough	78	44	53	25	50	33	23	74	32
Gonorrhoea	38	22	31	28	28	32	34	12	41
Syphilis	31	29	21	63	33	24	64	40	58

* Made reportable January 1, 1925.
** Made reportable July 1, 1928.
Remarks: No cases of cholera, Asiatic, glanders, plague, rabies in humans and yellow fever during the past seven years.

A MEMORIAL TO DR. HORACE K. FOSTER (READ AT A RECENT MEETING OF THE MASSACHUSETTS MEDICO-LEGAL SOCIETY)

Dr. Horace K. Foster served his district in Essex County as Medical Examiner for a long term of years. His official duties were marked by devotion and painstaking skill. He served this Society as Treasurer, showing a noteworthy degree of fidelity and efficiency. His activities as member and official of this Society compel our gratitude and commendation.

Dr. Foster was dignified, quiet, and forceful in his manner. His dignity and repose were the natural results of a fine background of birth and education and his forcefulness was as impressive as the steady flow of a river. This Society has lost its association with a rare personality.

Therefore, be it resolved: That this Society spread upon its records the expression of our genuine sorrow for the death of Dr. Foster and our heartfelt appreciation of his living example as a member of this Society.

That a copy of these resolutions be sent to the family of Dr. Foster and to the NEW ENGLAND JOURNAL OF MEDICINE for publication.

GEORGE L. WEST.

CORRESPONDENCE

A VERDICT FOR THE DEFENDANT

October 1, 1928.

Editor of the NEW ENGLAND JOURNAL OF MEDICINE:

In view of the fact that there has recently been considerable agitation in the Boston district regarding insurance of members of the Massachusetts Medical Society against malpractice suits, I am prompted to tell you that a recent case, in which suit was brought against me for alleged bad results following an operation, was very admirably handled by the United States Fidelity & Guaranty Company. A verdict for the defendant was secured. I feel that they were very thorough and energetic in preparing for the defence, and handled the case in a very nice manner.

Very truly yours,

J. R. NOYES.

THE SERVICE RENDERED IN AN INSURANCE CASE

October 3, 1928.

Editor, NEW ENGLAND JOURNAL OF MEDICINE:

Recently there has been some discussion in the JOURNAL concerning the services rendered by the United States Fidelity & Guaranty Company in connection with malpractice suits.

I should like to relate my experience with this company.

A badly crushed hand was the basis of a suit for $25,000.

I immediately notified the company and in reply received a very courteous letter asking for my notes on the case and informing me that they would protect my interests.

Nothing more was heard until about three years later when I had the first and the only conference with Mr. Henry V. Cunningham of Boston, Attorney for the company.

I was amazed at the amount of work that had been done.

Examinations of the Plaintiff by three leading Boston surgeons who were willing to testify for the Defendant upon short notice.

Certain correspondence which had important bearing upon the case has been unearthed—how it was obtained, I do not know. In fact Mr. Cunningham had ammunition for laying down a terrific barrage when the case came to trial.

The case never came to trial—it was dismissed by the Presiding Justice—judgment in my favor.

The United States Fidelity & Guaranty Company surely did render me service and I appreciate it.

Very truly yours,

EDWARD H. MACKAY, M.D.

92 Walnut Street, Clinton.

THE MEDICAL PROTECTIVE COMPANY'S CIRCULAR LETTER*

September 11th, 1928.

Dear Doctor:

Ezekiel Pratt, M.D., 385 Massachusetts Avenue, Arlington, Massachusetts is apparently the author of a letter which was published on page 250 of the August 2nd issue of the NEW ENGLAND JOURNAL OF MEDICINE.

This attack upon the Medical Protective Company by Dr. Pratt is utterly unjustified and so unnecessary as to excite speculation concerning his motive.

The only matter in our claim records, involving Dr. Pratt, arose in the year 1927. Dr. Pratt never at any time gave this Company any notice of the claim. He did notify George H. Crosbie, Agent of the Fidelity & Guaranty Company. Two weeks later Crosbie advised our Boston Office of the claim. This Company raised no question as to notice, though we understand there is some local precedent in Massachusetts for such a procedure. The claim had the attention of our Home Office, our Massachusetts General Agent and Hill, Barlow and Homans, our Boston lawyers. In July, 1927 the claim was settled, the Medical Protective Company paying one half, its full share of the settlement.

More than a year after this incident was closed, Dr. Pratt discovers that it is his "duty" to publish a criticism of this Company's "troublesome" service and to eulogize the Fidelity & Guaranty Company.

Another article in the same issue of the JOURNAL above referred to reports the experience of another Massachusetts physician who, like Dr. Pratt, did not give direct notice of claim to the Company whose cause is championed by Dr. Pratt. We can understand how it might be desirable, in certain quarters, to distract attention from this latter report and to attempt to minimize its logical effect by smirching the reputation of this Company, which is probably considered a formidable competitor.

The doctor suggests in his statement that only his favorite Company be allowed to present an insurance proposition to the JOURNAL readers. Just why you should be denied the privilege of choosing your own protection and allowed to consider only what Dr. Pratt thinks is good for you is not explained. From his office window he can doubtless sight landmarks in numbers, any of which should remind him that he takes issue with a principle that made Massachusetts a battle ground.

We have no desire to be unjust to Dr. Pratt, whose action may have been incited by those whose inter-

*Published by advice of the President of the Massachusetts Medical Society.

ests are not entirely confined to the welfare of the Massachusetts Medical Society. However, in all fairness to you and this Company, we consider it proper to submit this statement.

Appreciating your consideration of these facts we are.

Sincerely yours,
L. L. FRANK, *Vice-President.*

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn St., Chicago, Ill.
September 28, 1928.

Managing Editor,
THE NEW ENGLAND JOURNAL OF MEDICINE:

In addition to the articles enumerated in our letter of August 25th, the following have been accepted:

Abbott Laboratories
Ampoules Metaphen Solution 1.1,000, 10 cc.

Eli Lilly & Co.
Erysipelas Streptococcus Antitoxin (Lederle) Refined and Concentrated.
Tetanus Antitoxin, 20,000 units.

H. K. Mulford Co.
Diphtheria Toxin for the Schick Test, two 10 cc. vial packages.

Parke, Davis & Co.
Tetanus Antitoxin Globulin, 20,000 units.

E. R. Squibb & Sons
Diphtheria Toxin Antitoxin Mixture (Sheep)—Squibb.
Diphtheria Toxoid—Squibb.
Parathyroid Hormone—Squibb.

United States Standard Products Co.
Diphtheria Toxin-Antitoxin Mixture 0.1 L + (Non-Sensitizing).

Yours truly,
W. A. PUCKNER, *Secretary,*
Council on Pharmacy and Chemistry.

RECENT DEATHS

ROSE—DR. WILLIAM HENRY ROSE, surgeon, of Worcester, died at his home in that city, September 26, 1928, of angina pectoris at the age of 52.

The son of John and Emma Cooper Rose, he was born in Worcester, was educated in the public schools, graduating from Worcester High School in 1894. He received his M.D. at Harvard Medical School with the class of 1898. He served as intern in the Boston City Hospital for one and one-half years and in the Lying-in Hospital for one year. Settling in practice in his native city in 1902, Dr. Rose devoted himself mainly to the practice of surgery and became senior surgeon at the Worcester Memorial Hospital, consultant of Fairlawn Hospital, divisional surgeon in chief in the East of the American Steel & Wire Co., and examiner of the Mutual Life Insurance Co., of New York.

In 1927 he delivered the annual oration before the Massachusetts Medical Society with the topic: "Industrial Surgery." He was a member of the College of Surgeons and of the American Medical Association. Other memberships were: The Tatnuck Country Club, Worcester Club, Owl Club, Megantic Fish & Game Club and Harvard Club.

Dr. Rose was a member of the Athelstan Lodge, A. F. & A. M., Eureka Chapter, Hiram Council, Knights Templar and Aleppo Temple. He is survived by his widow, Grace Martin Rose, two brothers and a sister.

COGSWELL—DR. WILLIAM COGSWELL, surgeon, of Haverhill, who served in the Medical Corps U. S. Army, in three wars, died at his home in Haverhill after a long illness, September 26, 1928, aged 61.

He was born in Salem, March 24, 1867, was educated at Dummer Academy and at Dartmouth College where he received an A.B. in 1890. Going on to Harvard Medical School he took his M.D. in 1894 and settled in Boston, joining the State Medical Society in 1896 and moving to Haverhill in 1908.

During the Spanish-American War, he served as surgeon with the Eighth Massachusetts Infantry, during the Philippine insurrection as surgeon of the Forty-Sixth Infantry, and during the World War as surgeon of the Seventy-Third Coast Artillery Corps, with the rank of major throughout his entire service.

Dr. Cogswell was a member of the Loyal Legion and a Fellow of the American College of Surgeons and of the Massachusetts Medical Society. He belonged also to the Psi Epsilon fraternity.

He is survived by his wife, Mrs. Miriam Clay Cogswell and by a son, William Cogswell, Jr.

BARTLETT—DR. FREDERICK RUSSELL BARTLETT, a graduate of the College of Physicians and Surgeons, Boston, in 1885, a practitioner of ophthalmology, died at his home in Norwood, September 25, 1928.

NEWS ITEMS

APPOINTMENTS TO MEMBERSHIP ON THE BOARD OF REGISTRATION IN MEDICINE—Governor Fuller has appointed Dr. Edward Allen Knowlton and Dr. Robert Ferry Hovey to membership on the Board of Registration in Medicine to fill the places made vacant by the resignation of Dr. Walker and the termination of the period of service by Dr. Corr. Both have qualified and met with the board September 27, ult. Dr. Knowlton was born in New Bedford, Massachusetts in 1883 and was educated in the public schools of New Bedford and Phillips Exeter Academy. He graduated from Tufts College Medical School in 1909. He served as House Officer of the Boston Floating Hospital, Surgical Intern at the Boston City Hospital and St. Mary's Lying-In Hospital. He practices medicine in Holyoke having an office at 327 Appleton Street.

Dr. Hovey was born in Monson in 1875. He was educated in the Monson Academy and graduated from the New York Homeopathic College in 1897. He served as Resident Physician in the Rochester Homeopathic Hospital of Rochester, New York, for two years. He is engaged in practice in Springfield having an office at 151 Forest Park Avenue.

We congratulate the Governor on two excellent appointments.

REVOCATION OF THE REGISTRATION OF DR. L. G. HAGOPIAN—The Board of Registrations in Medicine at a meeting held September 27, 1928, revoked the certificate of registration formerly issued to Dr. Levon G. Hagopian who is now serving a sentence in State Prison on conviction for being an accessory before and after the performing of a criminal abortion.

At the same meeting the application of Dr. Hormidas Choquette for restoration of his right to practice was denied. Dr. Choquette's registration was revoked a year ago because evidence tending to show that he had operated on a woman with the intention of producing an abortion was submitted to the Board of Registration.

NEW ENGLAND PEDIATRIC SOCIETY AND PHILADELPHIA PEDIATRIC SOCIETY TO HOLD JOINT MEETING—The New England Pediatric Society and the Philadelphia Pediatric Society will conduct a combined meeting at Philadelphia, October 13, at 8:30 P. M.

HARVARD MEDICAL SCHOOL NEWS—LECTURES ON "THE CARE OF THE PATIENT"—These lectures will discuss, from the viewpoint of clinicians in various lines of work, the care of the individual human subject as against the care of the disease. They will be given in Amphitheatre C at 5:00 P. M. as follows:

Tuesday, October 16th—Dr. James H. Means.
Thursday, October 18th—Dr. Alfred Worcester.
Tuesday, October 23rd—Dr. Warfield T. Longcope.
Thursday, October 25th—Dr. Richard C. Cabot.

These lectures are open to the general medical profession.

The new students, under the auspices of the Phillips Brooks House association, were addressed by President Lowell, Dr. Edsall and Dr. Hale on Monday evening, September 24th, in the Gymnasium at Vanderbilt Hall.

The following resignations have been accepted:

Dr. Percival Bailey, Instructor in Neuropathology and in Surgery; effective July 1, 1928.
Dr. Charles Lloyd Connor, Instructor in Pathology; effective August 1, 1928.
Dr. Edwin Baker Goodall, Assistant in Ophthalmology; effective September 1, 1928.
Dr. John Harper Blaisdell, Instructor in Dermatology; effective September 1, 1928.
Dr. Lawrence Weld Smith, Assistant Professor of Pathology; effective September 1, 1928.
Dr. Joshua Clapp Hubbard, Clinical Professor of Surgery; effective September 1, 1928.
Dr. Reginald Hammerick Swithwick, Alumni Assistant in Surgery; effective September 1, 1928.

Dr. W. G. Smillie has been appointed Professor of Public Health Administration in the Harvard Public Health School. Dr. Smillie graduated from Harvard Medical School in 1912, interned at the Peter Bent Brigham Hospital and since has been doing notable work with the Rockefeller Foundation.

The Warren Anatomical Museum under the direction of Dr. Myrtle Canavan has made arrangements for the entertainment of the American College of Surgeons, which is now in session in Boston. Especial displays will be old surgical instruments, special spines, the teaching tanks, the phrenological collection, the E. H. Nichols bone surgical collection, the bone tumor collection, and certain special exhibitions, the most notable being a specimen of an upper arm showing absorption of bone due to repeated fractures, while still maintaining fairly good function.

PARTNERSHIP OF F. B. GRANGER, M.D., AND DR. WILLIAM McFEE—Dr. Frank B. Granger and Dr. William D. McFee have entered into partnership and will practise physical therapeutics at Dr. Granger's office, 520 Commonwealth Avenue, Boston, Massachusetts.

REMOVAL—Dr. Henry Hardwick Faxon announces the opening of his office at 264 Beacon Street, Boston, Massachusetts.

NOTICES

SUFFOLK DISTRICT MEDICAL SOCIETY

CENSORS' MEETING

The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, No. 8 The Fenway, Thursday, November 1, 1928 at 4:00 o'clock.

Candidates should make personal application to the Secretary, and present their medical diploma at least one week before the examination.

ARTHUR H. CROSBIE, *Secretary.*
520 Commonwealth Avenue.

SENIOR MEDICAL OFFICER
MEDICAL OFFICER
ASSOCIATE MEDICAL OFFICER
ASSISTANT MEDICAL OFFICER

Applications will be rated as received by the U. S. Civil Service Commission at Washington, D. C., until December 29, 1928.

The United States Civil Service Commission announces open competitive examinations under the above titles for filling vacancies occurring in the Federal classified civil service throughout the United States, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

There is especial need for medical officers qualified in tuberculosis or neuropsychiatry.

For detailed information apply to the United States Civil Service Commission.

REMOVAL OF THE OFFICE OF DR. MOSES J. STONE

Dr. Moses J. Stone announces the removal of his office from No. 636 Beacon Street, Boston, Mass., to No. 11 Marlborough Street, Boston, Mass.

REPORT AND NOTICES OF MEETINGS

THE SOUTH END NEIGHBORHOOD MEDICAL CLUB

The first monthly meeting of the South End Neighborhood Medical Club will be held on Tuesday, October 16, 1928, at 12 o'clock noon, at 554 Columbus Avenue, Boston.

The speaker will be Dr. J. Dellinger Barney, G. U. Service, Massachusetts General Hospital, and Assistant Professor, Harvard Medical School. His subject will be "Symptomatology of Malignant Disease of the Urinary Tract". This will undoubtedly be an interesting meeting because of the reputation of Dr. Barney.

The Program Committee is arranging for the year's meetings, and expects some good speakers to discuss interesting subjects. It is hoped that

members will attend in large numbers. The usual luncheons will be served.

ESSEX NORTH DISTRICT MEDICAL SOCIETY

The 87th quarterly meeting will be held at Essex Sanatorium, Middleton, Mass., (Tel. Danvers 300-W) upon invitation of the Foresters, and Olin M. Pettingill, M.D., Supt., Wednesday, Oct. 17, at 2 P. M., and will be a joint meeting with these District Societies, Middlesex East and North, and Essex South. The program is as follows:

2-4 P. M. Clinic, showing the leading types of Pulmonary Pathology upon the patient, with accompanying X-rays by Dr. Pettingill and staff.

3-4 P. M. Moving Picture reel, "Physicial Examination of Chest," in moving picture room.

4 P. M. Talk and demonstration in dining room upon the living subject by Edwin W. Bullock, M.D., of Boston, from the New England Telephone & Telegraph Co. upon "Resuscitation from Electric Shock, Inhalation of Illuminating Gas, and Prolonged Immersion in Water." He will be assisted by Mr. Gilson of the Beverly Gas and Electric Co. (45 minutes).

Talk by Jas. S. Stone, M.D., of Boston, Executive Secretary to the President of the Massachusetts Medical Society, upon "Activities of the Society."

Discussion invited.

6 P. M. Dinner in dining room.

The next meeting of the Censors will be held at Hotel Bartlett, 95 Main St., Haverhill (Tel 3430) Thursday, Nov. 1, at 2 P. M. sharp.

Checks for contributions to the Massachusetts Medical Society Building Fund may be made to A. K. Stone, M.D., State Treasurer and sent to District Secretary.

J. Forrest Burnham, M.D., *Secretary*,
567 Haverhill Street, Lawrence, Mass.
Gustave E. Kurth, M.D., *President*.
Oct. 9, 1928.

MASSACHUSETTS PSYCHIATRIC SOCIETY

The Massachusetts District of the American Psychiatric Association

J. V. May, M.D., President.
Douglas A. Thom, M.D., Vice-President.

The Annual meeting and election of officers of the Massachusetts Psychiatric Society will be held in Parlor A (mezzanine floor) of the Hotel Statler, Boston, at 6:30 P. M., Friday, October 19, 1928.

The address of the evening will be delivered by Dr. Frederick W. Parsons, Commissioner of the Department of Mental Hygiene of the State of New York. His subject will be: "The Mental Hygiene Situation in New York State". The remarkable developments along the line of mental hygiene in New York during the last few years are of interest and importance to all psychiatrists. The Psychiatric Institute to be opened shortly in New York City will render available for the first time in this country facilities for researches in psychiatry equal to those abroad. A psychopathic hospital is now being built in Syracuse and several new State hospitals are being erected. In the construction and arrangement of these institutions new lines are being followed. New York has inaugurated a mental hygiene program such as has never been undertaken before in this country. Do not miss this opportunity to hear Dr. Parsons' story of what is being done there. It will be well worth while.

It is to be hoped that every member who can attend will be present at this meeting, as important matters relating to the future policies of the Society must be given consideration. Some changes will be necessary owing to the fact that it now constitutes a district of the American Psychiatric Association.

Winfred Overholser, M.D.,
Secretary and Treasurer.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Notice. Change of time for Joint Meeting, at Middleton, October 17, 1928.

Clinic from 2 to 4.

4 P. M. Dr. Bullock, New England Tel. and Tel., will speak on "Resuscitation from Electric Shock, Illuminating Gas and Immersion in Water," assisted by Mr. Gilson of the Tenney Service, Beverly Gas and Electric Co.

Following Dr. Bullock, Dr. James S. Stone will speak on Activities of the Society.

6 P. M. A Buffet Supper will be served.

ANNUAL MEETING OF THE ACADEMY OF PHYSIOTHERAPY

This meeting will take place Friday and Saturday, October 19 and 20, at the Pennsylvania Hotel, New York City. A very elaborate and interesting program has been distributed, copies of which may be secured by applying to Secretary-Treasurer, Dr. Thomas L. Smyth, Allentown, Pa.

Among the prominent essayists the following names appear:

Dr. Frank B. Granger of Boston; Dr. Edward H. Trowbridge of Worcester; Dr. Edwin N. Kime of Indianapolis; Dr. Frederick W. O'Brien of Boston; Dr. Howard A. Kelly of Baltimore; Dr. Ernest M. Daland of Boston; Dr. Herman Osgood of Boston; Dr. William D. McFee of Haverhill; Dr. Frank E. Stowell of Worcester; Dr. Fred H. Albee of New York City and Dr. Joseph Resnik of Boston.

The most important subjects dealt with in the discussion of Physiotherapy will be covered by these authors.

NEW ENGLAND ASSOCIATION FOR PHYSICAL THERAPEUTICS

The regular monthly meeting of the New England Association for Physical Therapeutics will take place on October 17, 1928, at 8 P. M., at the Boston Medical Library. Symposium on the Aspects of Certain Diseases of the Colon with Especial Reference to Their Etiology and Treatment by Electro Physical Methods.

Speakers: Fred H. Morse, Boston; George J. Ott, Boston; George E. Percy, Salem; A. E. Austin, Boston; John W. Dewis, Boston.

MEETING OF THE BRISTOL NORTH DISTRICT MEDICAL SOCIETY

The Bristol North District Society held its fall meeting on September 20th at the Bristol County Tuberculosis Hospital, Attleboro, Mass. A dinner was served to the members and following this Dr. Charles F. Painter of Boston read a most interesting paper on "Medical Education—Some Modern Trends."

The society passed the following resolution, "Moved that the Bristol North District Medical Society endorse the principle of a cost rate for hospital care and a paid medical service for all patients protected by insurance against injury or sickness in all hospitals maintained in part by income from endowed charity or annual subscriptons." Dr. Kingsbury was appointed reporter to the JOURNAL for Taunton and Dr. Bixby for Attleboro.

J. L. MURPHY, *Secretary.*

SOCIETY MEETINGS

October 8-12—Clinical Congress of the American College of Surgeons. For complete notice see page 695, issue of October 4.

October 8-13—Clinical Congress of Physical Therapy and Seventh Annual Meeting American College of Physical Therapy. Complete notice appears on page 545, issue of September 13.

October 12-19—Inter-state Postgraduate Medical Association of North America. Detailed notice appears on page 589, issue of September 20.

October 16—South End Neighborhood Medical Club. For complete notice see page 749.

October 17—New England Association for Physical Therapeutics. For details see page 750.

October 19—Massachusetts Psychiatric Society. Detailed notice appears on page 750.

October 19, 20—Annual meeting of the Academy of Physiotherapy. See page 750 for complete notice.

October 23-24—The autumn meeting of the State Nurses' Association. For complete notice see page 649, issue of September 27.

Combined Meetings of the Boston Medical Library, the Suffolk District Medical Society, the Middlesex South District Medical Society and the Norfolk District Medical Society

October 31, 1928—Stated meeting. Symposium by the Staff of the Children's Hospital.

November 21, 1928—Meeting in association with Norfolk District Medical Society. Dr. Frederick W. O'Brien will read the paper entitled "Recent Advances in Physical Therapy" and Dr. Edwin T. Wyman will open the discussion.

December 19, 1928—Surgical Section. Symposium on Stomach Surgery. "Operative Procedures; Indications and Results," Dr. R. H. Miller; "Selection and Management of Patients for Gastric Surgery," Dr. H. M. Clute; "Acute Perforations of Stomach and Duodenum," Dr. W. R. Morrison; "Results of a Series of Stomach Operations," Dr. E. S. Emery, Jr. Discussion by Doctors David Cheever, Edward P. Richardson, Frank H. Lahey and I. J. Walker.

January 30, 1929—General meeting in association with Boston Medical Library. "Heredity," Professor George H. Parker, Harvard University.

February 27, 1929—Medical Section. "The Newer Knowledge of Nutriment," Dr. Lafayette B. Mendel (exact title to be submitted later), Yale University Medical School.

March 27, 1929—Meeting in association with Middlesex South District Medical Society. Title and speaker to be announced later.

April 24, 1929—Annual meeting. Speaker to be announced later.

The medical profession is cordially invited to attend all these meetings.

November 9-10—New England Surgical Society, Tenth Meeting. Complete notice appears on page 542, issue of September 13.

December 3-7—Radiological Society Convention. Detailed notice appears on page 712, issue of May 17.

DISTRICT MEDICAL SOCIETIES

Barnstable District Medical Society

Schedule of Meetings: November 1, 1928, February 7, 1929, May 2, 1929.

Bristol North District Medical Society

April 18, 1929—Spring meeting.

Bristol South District Medical Society

Meetings will be held November 7, 1928, and May 2, 1929. Complete notices will appear later.

Essex North District Medical Society

October 17, 1928 (Wednesday afternoon), at 2 P. M.—See page 750 for complete notice.

November 1, 1928 (Thursday)—Censors meet at Hotel Bartlett, 95 Main Street, Haverhill (Tel. 3430), at 2 P. M.

January 2, 1929 (Wednesday)—Semi-annual meeting at Haverhill, at 12:30 P. M.

May 1, 1929 (Wednesday)—Annual meeting at Lawrence, at 12:30 P. M.

May 2, 1929 (Thursday)—Censors meet at Hotel Bartlett, 95 Main Street, Haverhill, at 2 P. M. (Tel. 3430.)

Essex South District Medical Society

October 17, 1928 (Wednesday)—Essex Sanatorium, Middleton. Joint meeting with Essex North and Middlesex East and West. For complete notice see page 750.

November 1, 1928 (Thursday)—Censors meet for examination of candidates at Salem Hospital at 3:30 P. M. Candidates should apply to the Secretary (Dr. R. E. Stone, Beverly) at least one week prior.

November 7, 1928 (Wednesday)—Salem Hospital. Clinic at 5 P. M. Dinner at 7 P. M. Speaker: Dr. Harry Solomon, Boston. Subject: Syphilis of the Nervous System. Discussion by Drs. W. V. McDermott of Salem and C. A. Bonner of Hathorne (10 minutes each). Discussion from the floor.

Further announcements will follow.

Franklin District Medical Society

Meeting will be held on the second Tuesday of November, January, March and May.

Hampshire District Medical Society

December 12—Address by Dr. Philemon Truesdale.
March 13, 1929—Address by Dr. George E. Gage, Professor of Bacteriology and Physiology at the Massachusetts State College.

Middlesex East District Medical Society

The following schedule of meetings has been arranged for the coming year:

October 17—Middleton. (Joint meeting with Essex North and South and Middlesex North.)
November 14—Woburn.
January 16—Wakefield.
March—Reading.
May—Melrose.

Subjects and speakers to be arranged by committees in each city or town.

Middlesex North Medical Society

October 17—A combined meeting with Essex North and South.

The winter meeting will be held the last Wednesday in January.

The annual meeting will be held the last Wednesday in April.

Middlesex South District Medical Society

March 27, 1929—Joint meeting with the Suffolk and Norfolk Districts.

April, 1929—Annual meeting. Definite date to be announced later.

Norfolk District Medical Society

Below are the proposed meetings of the Norfolk District Medical Society for the 1928-29 Season. The schedule below will be adhered to as strictly as possible. The carrying out of the proposed plan will, of course, depend upon the acceptances of invitations extended to the speakers. Minor changes may be necessary.

October 30—Pondville Hospital. Dr. Lyman F. Jones, Superintendent. Inspection, 4 P. M.; Business Meeting at 5:30; Papers by the Staff; Collation.

November 21—Boston Medical Library. In combination with Suffolk District and Middlesex South District Societies. Subject, Recent Advances in Physical Therapy. Dr. Frederick W. O'Brien and Dr. Edwin T. Wyman.

January 29—Roxbury Masonic Temple. Subject, Treatment of Varicose Veins by the Injection Method—Dr. E. E. O'Neil. Dr. Homans will open the discussion.

February 25—Roxbury Masonic Temple. Dr. W. R. Ohler. Subject to be announced. Discussion to be opened by Dr. A. A. Hornor.

March 29—Roxbury Masonic Temple. Subject and speakers to be announced.

May, 1929—Annual meeting program to be announced.

The Censors of the Society meet November 8, 1928, and May 9, 1929, at the Roxbury Masonic Temple, Warren Street, Roxbury, at 4 P. M., for the examination of candidates.

Worcester North District Medical Society

October 23, 1928 (Tuesday)—At Gardner State Colony, by invitation. Program by Staff Colony.

January 22, 1929 (Tuesday)—At Henry Heywood Memorial Hospital, Gardner, by invitation. Program by Staff.

Annual meeting the fourth Tuesday in April.

BOOK REVIEWS

Medical Report of the Hamilton Rice Seventh Expedition to the Amazon, in Conjunction with the Department of Tropical Medicine of Harvard University, 1924-1925. Contributions from the Harvard Institute for Tropical Biology and Medicine, No. IV. Cambridge, Harvard University Press, 1926. xvi+ 313 pages.

This volume on the medical aspect of the Rice Expedition is one of great interest to all students of tropical medicine and contains a considerable amount of information about diseases which also appear outside of the tropics. The members of the medical staff, Dr. Richard P. Strong, Dr. George C. Shattuck and their assistants, investigated many diseases and found that the Amazon Valley offered a very wide field for their labors. Some diseases were very prevalent; for instance, the population of a single city, Manáos, of about 50,000 has a nearly 50% infection of syphilis. There are other spirochaetal infections besides syphilis, some of them producing local skin lesions and others primarily infecting the blood. The local skin lesions were especially studied by the expedition and work was done on the etiology of the tropical sloughing phagedena. It was found that microscopically the necrotic lesion contained many Spirochaeta schaudinni together with the fusiform bacillus. The other diseases studied, although not so extensively, were leishmaniasis, leprosy and malaria, which was found to be very prevalent and a most serious disease. The commonest and perhaps most striking disease seen by the medical staff was splenomegaly and they found that about half of the children seen had this disease, the etiology of which is unknown.

Another section of the publication is given over to medical and economic entomology, with descriptions of the various insects found in the region. A third section is Dr. Shattuck's report on a trip that he took further up the Amazon Valley. He found in this region that malaria was very extensive and observations were made upon cases of phthisis, tumors, dysentery, arteriosclerosis and poliomyelitis.

The book is handsomely illustrated, printed and bound. There is a good index, many colored plates are inserted and the whole report sets a high standard. It is hoped that funds may be found to continue this type of work which is so important to medicine.

This is the seventh expedition under the leadership of Dr. A. Hamilton Rice. The geographical part of the expedition and the use of a hydroplane and wireless telegraphy have been emphasized in the separate reports published by Dr. Rice and Lieutenant Hinton, the aviator (*World's Work*, October and November, 1925).

American Medicine and The People's Health. By HARRY H. MOORE, Public Health Economist, United States Public Health Service. Published by D. Appleton and Co. 647 pages.

This book is an extremely thorough survey of the economic aspects of American medicine. The author first describes the existing conditions of medical practice, including its organization and the various agencies through which medical care is carried to the people. The activities of the government in this field, the development of private clinics and the conditions existing in private practice are set forth and discussed. In Part 2, Moore takes up the manifestations of the maladjustment in medicine. Part 3 deals with recent attempts to remedy this maladjustment, and Part 4 predicts the future of organized medicine.

The second half of the book consists of appendices which give in more detail facts bearing on the various topics discussed in the first half. Among the subjects treated are fee-splitting, bases for determining charges, the exploitation of free clinics. There are in all 43 appendices; the gathering of the statistics quoted and the selection of opinions taken from current medical and social literature prove the thoroughness and the good judgment with which the work was done.

The book is admirably constructed and the material is excellently presented. The author bases his contentions upon the facts which he has assembled and although he is not a physician he views the physician's economic problems with understanding. It will be read with profit and pleasure by everyone who has the slightest interest in the problems of public health or in those of the practice of medicine.

Stedman's Medical Dictionary.

The tenth revised edition of this Dictionary presents several hundred new medical terms and references to the modification of those in common use.

The constantly changing habits of medical writers and discovery of new facts imposes a burden on lexicographers which have been well met in this publication.

Although much useless material has been eliminated the additions to medical terms have necessitated making this dictionary larger and it will be found quite up-to-date.

The illustrations are excellent and the mechanical construction is high grade.

It should be in the hands of medical practitioners and writers who wish to keep abreast of the times.

The Medical Department of the United States Army in the World War. Vol. XIII, Part one, *Physical Reconstruction*, by MAJOR A. G. CRANE, S.C. Part Two, *The Army Nurse Corps*, by JULIA C. STIMSON, Superintendent, Army Nurse Corps. U. S. Government Printing Office, Washington, 1927. Pp. 998.

This, the thirteenth volume of the Medical Department World War series is one of the most interesting of the issue, having to do with such vital problems as reconstruction, vocational education, and the Army Nurse Corps.

An appendix of 643 pages gives detailed information on every conceivable problem of physical reconstruction and vocational training.

The appendix and the other parts of the work are profusely illustrated, many of them showing different forms of reconstruction work being done, over seas as well as at home.

It is interesting to note in the introduction that "Compulsory training ceased in France and Italy as soon as the man was discharged from the army,

with the Belgians on the other hand, the state had to maintain them there being no Belgium for them to get back to."

In speaking of the work of physical reconstruction as carried on in some of the foreign armies, it is a pleasure to note that Sjörgen of Sweden reporting on reconstruction in Germany, states that the greatest emphasis in the after treatment was not placed on passive orthopedic movements, but on active gymnastic exercises carried out under military word of command. The psychic problems presented by the recovering soldier, who is temporarily or permanently physically handicapped for his future life work are taken up in detail in the chapters on welfare organization and morale.

The account of the Army Nurse Corps, its origin and organization, and its problems of the world war, at home and abroad, forms an interesting and all too short section of the work, which must be read in detail to be appreciated.

The difficulties and discomforts of travel over seas for women in war time, often without knowledge of the countries traversed, separated at times completely from their officers and men, made the nurse's work doubly hard at times, and what some of them went through can never be adequately appreciated, except by the men and women who actually experienced the trials and problems of foreign service.

Studies on Scurvy. Arthur W. Meyer and Lewis M. McCormick. Stanford University Press. 1928. pp. 107.

In this monograph is given a careful gross and microscopic description, as well as some excellent photographs, of lesions in the guinea pig which the authors believed to be scurvy. There is also a section on the blood changes in this same condition. It is rather striking that the authors arrive at entirely contradictory conclusions to those of Wolbach and Howe in their careful work.

As yet the diagnosis of experimental scurvy in animals has no exact and generally accepted criteria. Changes here described seem to vary not a little from those commonly accepted in scurvy.

Dictionary of American Medical Biography: Lives of Eminent Physicians of the United States and Canada, From the Earliest Times, by Howard A. Kelly, M.D., LL.D. and Walter L. Burrage, A.M., M.D. D. Appleton and Co., New York and London, 1928. xxx + 1364 pages.

The new edition of Kelly and Burrage's well-known "Dictionary of American Medical Biography" cannot help but receive a warm welcome from students, librarians and the general medical public. Although no "Biography" ever loses its usefulness, the original edition by Kelly in 1912 has long since been out of print and the second edition by Kelly and Burrage (1920) has not been obtainable; nor was either of these editions widely known or properly advertised. The new volume now contains 2049 well written biographies and it has been brought up to date, to include the year 1926. As in the previous issues, the names of living physicians have not been admitted. The volume is well printed and bound.

The book is the result of many hands, but to Dr. Kelly and Dr. Burrage fell the brunt of the work. They have done their work well and to all those who have ever attempted to write a biography realization must come to the enormous amount of research involved in a publication of this kind. One rarely finds an inaccuracy. Many of the biographies are beautifully written, especially those by Burrage on the Shattuck family and John Ware, E. W. Taylor's thoughtful summary of the life of J. J. Putnam, C. K. Mill's Weir Mitchell, J. F. Fulton's A. R. Cushny, Kelly's Osler and F. R. Packard on John Morgan and Benjamin Rush, to mention only a few of those that appear outstanding. It is hoped that the volume will find its way into the hands of many physicians as well as public institutions. It richly deserves a wide sale.

Acute Aplastic Anemia, by A. Hayes Smith. London. H. K. Lewis and Co. Ltd. 1928, Pp. 80.

This book concerns a case considered by the author to be one of Aplastic Anemia in a child aged 2 years, but many physicians would not make this diagnosis unequivocally from the data given. Many forms of treatment were used including a preparation of liver given by subcutaneous injection. There is no evidence given that this preparation contained any active principle potent in the amounts used. The recovery of the patient is attributed to the liver therapy but there is no scientific reason for this assumption. It is unfortunate that good paper and ink should be consumed in the publication of unsatisfactory monographs on one case.

Schizophrenia (Dementia Praecox). An Investigation by The Association for Research in Nervous and Mental Diseases. Paul B. Hoeber, Inc., New York —Publisher.

This volume recently issued gives the proceedings of the 1925 meeting of The Association for Research in Nervous and Mental Diseases. It contains twenty-six chapters written by thirty-one well known contributors in the field of psychiatry. The chapters are well grouped into nine sections covering the field and include an historical survey, statistical studies, heredity and constitution including personality, etiological considerations, special investigations, language and art productions, pathology, prognosis and treatment.

The present field of knowledge concerning this so-called "mental disease" is covered in this book thoroughly and with authority. Yet, after reading it one is reminded of the phrase that "We know more and more about less and less." Mental disease remains a phase of human life, and human life will ever remain too complex for complete analysis or classification.

No student of psychiatry can gain as comprehensive a grasp of the subject of schizophrenia from any single textbook as he can from a perusal of this well edited book.

Blood and Urine Chemistry. R. B. H. Gradwohl and I. E. Gradwohl. pp. 542. C. V. Mosby Co., St. Louis. 1928.

With the numerous books available on laboratory procedure a new one must be of exceptionally good quality to be worth adding to the already crowded shelves. While this volume is up to the average perhaps, it is hardly of outstanding character.

It is divided into four parts: The technic of blood chemistry, the chemistry of urine, the interpretation of blood chemical findings and basal metabolism.

So far as methods are concerned the description is quite adequate. The discussions of interpretation, however, are somewhat disappointing. One is rather impressed by the large amount of material in quotation marks which apparently have merely passed through the typewriter rather than the author's brain. Thus, from page 59 to page 69 is one solid quotation. Again, from page 259 to 280, we have another quotation including case histories and tables. With a brief breathing space on page 280, of three lines, giving the reference for the next quotation, we find one that lasts to 292. However, there is no need to go into further detail. We have a right to expect in a text book the currently accepted facts and theories condensed and focused by the writer rather than merely transcribing page after page, even though this quotation might give the material entirely adequately.

The Nose, Throat and Ear, by DR. JOHN F. BARNHILL, Indianapolis, Ind. Published by Appleton & Co., 1928.

This text-book, written for students and practitioners of medicine, is based largely on the author's long experience as a surgeon and teacher of otolaryngology. Almost no reference is made to the work of other men, there is no bibliography, and there are presented only the particular procedures and form of treatment used by the writer. This plan achieves simplicity and unification for all those who do not demand a comprehensive book of reference.

There are 600 pages of good type, 450 excellent black and white illustrations and an adequate index. Two thirds of the book is devoted to diseases of the nose and throat, one third to those of the ear. Chapters are subdivided by clear, heavy-faced type into sections on anatomy, physiology, pathology, symptoms, diagnosis and treatment, according to the indications.

An introductory chapter on office equipment is followed by discussion of the nose and nasal sinuses, nasal injuries and deformities, and plastic surgery of the nose and septum. The subject of nasal neuroses precedes that of surgery of the sinuses and their malignant affections. The discussion of pharyngeal diseases, adenoids and tonsils, in all their extensive details, occupies several chapters. Innovations of great interest are a chapter on the effects of climate on otolaryngological diseases, another on headache and neuralgia, and still another on the relation of diseases of the ear, nose, and throat to the systemic diseases, typhoid, diphtheria, scarlet fever, and measles. Of like importance is a discussion of focal infection in rheumatism, arthritis and asthma so far as concerns the nose and throat. Tuberculosis and syphilis of these special structures are treated in a separate chapter.

Next follow accounts of the larynx and its diseases, tumors and neuroses, and an interesting addition dealing with defects in speech. The final portion of the section on the nose and throat concerns foreign bodies in the air and food passages, bronchoscopy, esophagoscopy, tracheotomy and intubation.

The initial section dealing with the ear covers the anatomy of the ear and its examination, and discusses its function and the causation of its special diseases. Affections of the external ear, middle ear and internal ear follow in order. Surgery of the mastoid and its complications such as sinus thrombosis, meningitis, brain abscess are fully considered. The diseases of the inner ear and disorders of the hearing function are presented in the light of the most recent investigations. The unusual subjects of the relationship of hearing to life insurance and of artificial aids to hearing complete the book.

One has here a readable, concise and well illustrated text-book on otolaryngology, serviceable both to students and practitioners of this specialty. It is based on one man's experience and is not a book of reference. It would seem as though a title might have been more tastefully selected.

Folklore of the Teeth. By LEO KANNER, M.D. Yankton State Hospital, Yankton, South Dakota. 316 pages and 17 illustrations. The Macmillan Co., New York. 1928.

The author states in the introduction that "He has attempted, in this book, to give an outline of the folklore of the teeth, introducing it at the same time as a new branch of dental science, just as the folklore of medicine is, or should by all means be, considered as a branch of medical science."

The author has collected the material from literature, from museums, from oral communications, and through travels. He not only includes the customs but also the superstitions and traditions, proverbs, folk-songs, legends, charms, invocations, the pathologic and therapeutic beliefs and measures as centered upon the teeth, their development, their number and position, their diseases, their loss, their use outside of the oral cavity and the various forms of their mutilation.

The subject is treated in an exhaustive manner. There is also a bibliography and glossary at the end of the volume. The book is very instructive from a historical point of view and full of interesting, and in part very amusing data.

Final Report of the League of Nations International Commission on Human Trypanosomiasis. pp. 391. Geneva. 1928.

This report consists of a number of articles dealing with trypanosomiasis in the Uganda region. One of the most extensive reports is that of Duke on the study of strains of T. gambiense, experiments on the transmissibility by the tse-tse fly of polymorphic trypanosomes from mammals other than man.

There is an interesting section on the pathology of trypanosomiasis by Peruzzi.

The results of the report are summed up in certain general recommendations which may be summarized as follows:

1. The control of movement of natives, including the delimitation of areas from and to which trypanosome infected individuals are not permitted to move.
2. A thorough and complete census should be made of all infected natives.
3. Treatment of all infected natives with after care and follow up.
4. The evacuation of heavily infected zones.